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VOL. XLV.

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WITH A LIST OF OFFICERS, FELLOWS, ETC.

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AND

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1903† CLAYTON, JOHN HAZELWOOD, M.B.Lond., 16, Hagley road, Edgbaston, Birmingham.

1889 CLEMOW, ARTHUR HENRY WEISS, M.D., C.M.Edin., M.R.C.P.Lond., 101, Earl's Court road, Kensington, W.

1865*†COATES, CHARLES, M.D., Physician to the Bath General and Royal United Hospitals; 10, Circus, Bath.

1875* COFFIN, RICHARD JAS. MAITLAND, F.R.C.P.Ed., 8, Wetherby terrace, Earl's Court, S.W.

1875*†COLE, RICHARD BEVERLY, M.D. Jefferson Coll. Philad., 218, Post street, San Francisco, California, U.S.

1897† COLES, RICHARD A., M.B. & C.M.Aber., Barham, near Canterbury.

1888 COOPER, PETER, L.R.C.P.Lond., Stainton Lodge, 35, Shooter's Hill road, Blackheath, S.E.

1875*†CORDES, AUG., M.D., M.R.C.P., Consulting Accoucheur to the "Miséricorde;" Privat Docent for Midwifery at the University of Geneva; 12, Rue Bellot, Geneva. *Trans.* 1.

1883 CORNER, CURSHAM, L.S.A., 113, Mile End road, E.

1903. CORTHORN, ALICE MARY, M.B., B.S.Lond., 30, St. Mary Abbot's terrace, Kensington.

1877 CRAWFORD, JAMES, M.D.Durh., Grosvenor Mansions, Victoria street, S.W.

1893 CRIPPS, WILLIAM HARRISON, F.R.C.S., Surgeon to St. Bartholomew's Hospital; 2, Stratford place, W. *Trans.* 1.

1889† CROFT, EDWARD OCTAVIUS, M.D.Durh., Hon. Surgeon to the Hospital for Women and Children; Hon. Demonstrator of Obstetrics to the Yorkshire College, Leeds; 8, Clarendon road, Leeds. *Trans.* 1.

Elected

1881*†Cronk, Herbert George, M.B. Cantab., Repton, near Burton-on-Trent.

1893 Crosby, Herbert Thomas, M.A., M.B., B.C.Cantab., 19, Gordon square, W.C.

1895 Cross, Ernest W., L.R.C.P.Lond., The Limes, Wallwood Park, Leytonstone.

1886*†Cross, William Joseph, M.B., Horsham, Victoria, Australia.

1898† Cullen, Thomas, M.D.Toronto, Johns Hopkins Hospital, Baltimore, U S.A.

1875* Cullingworth, Charles James, M.D., D.C.L., F.R.C.P., Obstetric Physician to St. Thomas's Hospital; 14, Manchester square, W. *Council*, 1883-5, 1891-3, 1904. *Vice-Pres.* 1886-8. *Board Exam. Midwives*, 1889-91. *Chairman*, 1895-6. *Pres.* 1897-8. *Trans.* 13.

1889*†Cursetji, Jehángir J., M.D. Brux., 94, Chundunwádi, Bombay.

1894 Cutler, Lennard, L.R.C.P.Lond., 1, Kensington Gate, Kensington, W. *Trans.* 1.

1885 Dakin, William Radford, M.D., B.S., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery at, St. George's Hospital; 8, Grosvenor street, W., *Council*, 1889-91. *Hon. Lib.* 1892-3. *Hon. Sec.* 1894-7. *Vice-Pres.* 1898-1901. *Chairman*, 1901–4. *Trans.* 3.

1868 Daly, Frederick Henry, M.D., 185, Amhurst road, Hackney Downs, N.E. *Council*, 1877-9. *Vice-Pres.* 1883-5. *Trans.* 2.

1901 Daly, Frederick James Purcell, L.R.C.P.Lond., 95, Upper Clapton road, N.E.

1893 Dauber, John Henry, M.A. Oxon., M.B., B.Ch., Physician to the Hospital for Women, Soho square; 29, Charles street, Berkeley square, W.

Elected

1901 DAVIES, HUGHES REID, L.R.C.P.Lond., 196, Regent's Park road, N.W.

1892† DAVIS, ROBERT, M.R.C.S., Darrickwood, Orpington, Kent.

1877 DAVSON, SMITH HOUSTON, M.D., Campden villa, 203, Maida vale, W. *Council*, 1889-91.

1891 DAWSON, ERNEST RUMLEY, L.R.C.P.Lond., The Broadway, Leyton, E. *Council*, 1904. *Trans.* 1.

1889 DES VŒUX, HAROLD A., M.D.Brux., 8, James street, Buckingham gate, S.W. *Council*, 1896-8.

1894 DICKINSON, THOMAS VINCENT, M.D.Lond., M.R.C.P., Physician to the Italian Hospital, Queen square; 33, Sloane street, S.W. *Council*, 1900-2.

1894 DICKSON, JOHN WILLIAM, B.A., M.B., B.C. Cantab., 42, Hertford street, Mayfair, W.

1886† DONALD, ARCHIBALD, M.D. Edin., M.R.C.P., Obstetric Physician to the Royal Infirmary, Manchester; Honorary Surgeon to St. Mary's Hospital for Women, Manchester; Platt Abbey, Rusholme, Manchester. *Council*, 1893-5. *Trans.* 3.

1879* DORAN, ALBAN H. G., F.R.C.S., Surgeon to the Samaritan Free Hospital; 9, Granville place, Portman square, W. *Council*, 1883-5. *Hon. Lib.* 1886-7. *Hon. Sec.* 1888-91. *Vice-Pres.* 1892-4. *Pres.* 1899-1900. *Trans.* 22.

1890† DOUTY, EDWARD HENRY, M.A., M.B., B.C.Cantab., Davos Platz, Switzerland.

1887 DOVASTON, MILWARD EDMUND, M.R.C.S., Hatchcroft house, Hendon, N.W.

1899† DOWN, ELGAR, L.R.C.P.Lond., 14, Mount Edgcumbe terrace, Stoke, Devonport.

1896 DOWNES, J. LOCKHART, M.B., C.M. Edin., 269, Romford road, E.

Elected

1884† DOYLE, E. A. GAYNES, L.R.C.P., Colonial Hospital, Port of Spain, Trinidad.

1894† DREW, HENRY WILLIAM, F.R.C.S., Eastgate, East Croydon.

1903 DUKE, ALEXANDER, F.R.C.P.I., L.R.C.S.I., 8, Warwick road, Maida hill, W.

1883 DUNCAN, ALEXANDER GEORGE, M.B., 25, Amhurst park, Stamford hill, N.

1871* EASTES, GEORGE, M.B., F.R.C.S., 35, Gloucester terrace, Hyde park, W. *Council*, 1878-80.

1896 EASTON, FRANK EDWARD, L.R.C.P. Lond., 12, Devonport street, Hyde park, W.

1883† ECCLES, F. RICHARD, M.D., Professor of Gynæcology, Western University; 1, Ellwood place, Queen's avenue, London, Ontario, Canada.

1893 EDEN, THOMAS WATTS, M.D.Edin., M.R.C.P.Lond., Assistant Obstetric Physician to, and Lecturer on Practical Midwifery at, Charing Cross Hospital, 26, Queen Anne street, W. *Council*, 1897-9. *Board Exam. Midwives*, 1903–4. *Trans.* 4.

1903† EDGE, FREDERICK, M.D.Lond., F.R.C.S.Eng., 54, Darlington street, Wolverhampton.

1901† ELLIS, FRANCIS HAMILTON, M.B., B.C.Cantab., Grove Hospital, Tooting Grove, Tooting Graveney, S.W.

1894 ELLIS, ROBERT KINGDON, M.B., B.Ch.Oxon.

1873*†ENGELMANN, GEORGE JULIUS, A.M., M.D., 336, Beacon street, Boston, Mass., U.S.A.

1898† EVANS, DAVID J., M.D.McGill, 939, Dorchester street, Montreal.

1897 EVANS, EVAN LAMING, M.B., B.C.Cantab., F.R.C.S., 9, Stanhope place, Hyde park, W.

1875† EWART, JOHN HENRY, M.R.C.S., L.R.C.P., Eastney, Devonshire place, Eastbourne. *Council*, 1904.

Elected

1899 FAIRBAIRN, JOHN SHIELDS, M.D., B.Ch.Oxon., Assistant Obstetric Physician to St. Thomas's Hospital, 60, Wimpole street, W. *Council*, 1904. *Board Exam. Midwives*, 1904. *Trans.* 1.

1894 FAIRWEATHER, DAVID, M.A., M.D., C.M.Edin., Carlton Lodge, Palmerston road, Bowes Park, N.

1876† FARNCOMBE, RICHARD, M.D.Brux., 183, Belgrave road, Balsall heath, Birmingham.

1903† FARNCOMBE, WILLIAM TURBERVILLE, M.D., Harborne, Birmingham.

1869* FARQUHAR, WILLIAM, M.D., Deputy Surgeon-General, 40, Westbourne gardens, Bayswater, W.

1882† FARRAR, JOSEPH, M.D., Gainsborough. *Trans.* 1.

1894† FAZAN, CHARLES HERBERT, L.R.C.P. Lond., Belmont, Wadhurst, Sussex.

1868* FEGAN, RICHARD, M.D., Westcombe park, Blackheath, S.E.

1883 FENTON, HUGH, M.D., Physician, Chelsea Hospital for Women; 27 George street, Hanover square, W.

1901 FERGUSON, GEORGE BAGOT, M.D., B.Ch.Oxon, Altidore Villa, Pittville, Cheltenham.

1893† FINLEY, HARRY, M.D.Lond., West Malvern, Worcestershire.

1877*†FONMARTIN, HENRY DE, M.D., 26, Newberry terrace, Lower Bullar street, Nichols Town, Southampton.

1897† FOTHERGILL, W. E., M.B., C.M.Edin., 200, Oxford road, Manchester.

1884 FOURACRE, ROBERT PERRIMAN, M.R.C.S., 58, Tollington park, N.

1886† FOWLER, CHARLES OWEN, M.D., Cotford House, Thornton heath. *Council*, 1901–3.

1898 FRAMPTON, TREVETHAN, M.R.C.S., F.R.C.P., 168, Gloucester terrace, Hyde park, W.

Elected

1875*†Fraser, Angus, M.D., Physician and Lecturer on Clinical Medicine to the Aberdeen Royal Infirmary; 232, Union street, Aberdeen. *Council*, 1897-1900.

1888† Fraser, James Alexander, L.R.C.P. Lond., Western Lodge, Romford.

1902† Freeland, Arthur Raymond Stilwell, L.R.C.P., M.R.C.S., St. John's Cottage, Leatherhead.

1883* Fuller, Henry Roxburgh, M.D. Cantab., 45, Curzon street, Mayfair, W. *Council*, 1893. *Trans.* 1.

1886† Furner, Willoughby, F.R.C.S., 13, Brunswick square, Brighton. *Council*, 1894-6. *Hon. Loc. Sec.*

1874* Galabin, Alfred Lewis, M.A., M.D., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery at, Guy's Hospital; 49, Wimpole street, Cavendish square, W. *Council*, 1876-8. *Hon. Lib.* 1879. *Hon. Sec.* 1880-3. *Vice-Pres.* 1884. *Treas.* 1885-8. *Pres.* 1889-90. *Trans.* 12.

1888 Galloway, Arthur Wilton, L.R.C.P. Lond., 79, New North road, N.

1863* Galton, John H., M.D., Chunam, Sylvan road, Upper Norwood, S.E. *Council*, 1874-6, 1891-2. *Vice-Pres.* 1895-8.

1881 Gandy, William, M.R.C.S., Hill Top, Central hill, Norwood, S.E. *Council*, 1897-8.

1886*†Garde, Henry Croker, F.R.C.S. Edin., Maryborough, Queensland.

1887 Gardiner, Bruce H. J., L.R.C.P. Ed., Gloucester House, Barry road, East Dulwich, S.E.

1894 Gardner, H. Bellamy, M.R.C.S., L.R.C.P.Lond., 3, Mansfield street, Portland place, W.

1879 Gardner, John Twiname, 5, Embankment gardens, Chelsea, S.W.

1872*†Gardner, William, M.A., M.D., Professor of Gynæcology. McGill University; Gynæcologist to the Royal Victoria Hospital; 109, Union avenue, Montreal, Canada.

Elected

1876† GARNER, JOHN, M.R.C.S., 21, Easy row, Birmingham.

1891† GARRETT, ARTHUR EDWARD, L.R.C.S. & L.M.Ed., 5, Hertford street, Mayfair, W.

1873*†GARTON, WILLIAM, M.D., F.R.C.S., Inglewood, Aughton, near Ormskirk.

1901 GAYER, REGINALD COURTENAY, L.R.C.P., 13, Rosary gardens, South Kensington, S.W.

1889* GELL, HENRY WILLINGHAM, M.A., M.B. Oxon., 36, Hyde park square, W.

1898*†GEMMELL, JOHN EDWARD, M.B., C.M.Edin., Hon. Surgeon to the Hospital for Women, Liverpool; 12, Rodney street, Liverpool.

1902 GEORGE, JESSIE, L.R.C.P., L.R.C.S.Edin., 42, Marsden street, Calcutta, India.

1859* GERVIS, HENRY, M.D., F.R.C.P., Consulting Obstetric Physician to St. Thomas's Hospital; The Towers, Hillingdon, Uxbridge. *Council*, 1864-6, 1889-91, 1893. *Hon. Sec.* 1867-70. *Vice-Pres.* 1871-3. *Treas.* 1878-81. *Pres.* 1883-4. *Trans.* 8.

1866* GERVIS, FREDERICK HEUDEBOURCK, M.D.Brux., 1, Fellows road, Haverstock hill, N.W. *Council*, 1877-9. *Vice-Pres.* 1892. *Trans.* 1.

1899† GERVIS, HENRY, M.A., M.B., B.C.Cantab., 74, Dyke road, Brighton.

1883* GIBBONS, ROBERT ALEXANDER, M.D., Physician to the Grosvenor Hospital for Women and Children; 29, Cadogan place, S.W. *Council*, 1889-90. *Trans.* 1.

1894 GIBSON, HENRY WILKES, L.R.C.P. Lond., 6, College terrace, Fitzjohn's avenue, N.W.

1892 GILES, ARTHUR EDWARD, M.D. Lond., M.R.C.P., Physician to Out-patients, Chelsea Hospital for Women; 10, Upper Wimpole street, W. *Council*, 1898-1900. *Trans.* 7.

1869 GILL, WILLIAM, L.R.C.P. Lond., 11, Russell square, W.C.

Elected

1891 GIMBLETT, WILLIAM HENRY, M.D.Durh., Queen's road, Buckhurst hill, Essex.

1899† GLOVER, THOMAS ANDERSON, M.D., C.M.Edin., 24, Hallgate, Doncaster.

1894† GODDARD, CHARLES ERNEST, M.D., Wembley, Harrow.

1871 *GODSON, CLEMENT, M.D., C.M.; 82, Brook street, W. *Council*, 1876-7. *Hon. Sec.* 1878-81. *Vice-Pres.* 1882-4. *Board Exam. Midwives*, 1877, 1882-86. *Trans.* 5.

1893† GOODMAN, ROGER NEVILLE, M.A., M.B.Cantab., Thursley, Kingston Hill.

1893† GORDON, FREDERICK WILLIAM, L.R.C.P.Lond., Manukau road, Auckland, New Zealand.

1883 GORDON, JOHN, M.D., 63, Cheapside, E.C.

1869† GOSS, TREGENNA BIDDULPH, M.R.C.S., 1, The Circus, Bath. *Hon. Loc. Sec.*

1891† GOSTLING, WILLIAM AYTON, M.D., B.S.Lond., Barningham, West Worthing.

1889 GOULLET, CHARLES ARTHUR, L.R.C.P.Lond., 2, Finchley road, N.W. *Council* 1902–4.

1890 GOW, WILLIAM JOHN, M.D.Lond., Physician-Accoucheur in charge of Out-patients, St. Mary's Hospital; 27, Weymouth street, W. *Council*, 1893-5-1901. *Board Exam. Midwives*, 1898-1900-1. *Trans.* 2.

1893† GOWAN, BOWIE CAMPBELL, L.R.C.P.Lond., Raven Dene, Great Stanmore.

1893 GRANT, LEONARD, M.D.Edin., Hillside, New Southgate, N.

1902† GRECH, SALVATORE, M.D.Malta, 8, Strada Mezzodi, Valetta, Malta.

1894† GREEN, CHARLES ROBERT MORTIMER, F.R.C.S.Eng., Major, Indian Medical Service, c/o Inspector-General of Civil Hospitals, Bengal.

Elected

1887 GREENWOOD, EDWIN CLIMSON, L.R.C.P., 19, St. John's wood park, N.W.

1863 *GRIFFITH, G. DE GORREQUER, M.R.C.S., L.R.C.P., 34, St. George's square, S.W. *Trans.* 2.

1879* GRIFFITH, WALTER SPENCER ANDERSON, M.D. Cantab., F.R.C.S., F.R.C.P., Assistant Physician-Accoucheur to St. Bartholomew's Hospital; 96, Harley street, W. *Council*, 1886-8, 1893-5, 1901–3. *Hon. Lib.* 1896-7. *Board Exam. Midwives*, 1887-9. *Trans.* 10.

1888*†GRIMSDALE, THOMAS BABINGTON, B.A., M.B. Cantab., Surgeon to the Hospital for Women, and Medical Officer to the Liverpool Lying-in Hospital; 29, Rodney street, Liverpool.

1880 GROGONO, WALTER ATKINS, M.R.C.S., L.R.C.P., Witham Lodge, 171, Romford road, Stratford, E.

1896† GROVES, ERNEST W., M.B., B.Sc., Kingswood, Bristol. *Trans.* 1.

1881† HAIR, JAMES, M.D., Brinklow, Coventry.

1894 HAMILTON, BRUCE, L.R.C.P. Lond., "Falklands," 9, Frognal, N.W.

1887† HAMILTON, JOHN, F.R.C.S.Ed., Beechhurst House, Swadlincote, Burton-on-Trent.

1883 HANDFIELD-JONES, MONTAGU, M.D. Lond., F.R.C.P., Physician-Accoucheur to, and Lecturer on Midwifery and Diseases of Women at, St. Mary's Hospital; 35, Cavendish square, W. *Council*, 1887-9, 1896-7. *Board Exam. Midwives*, 1894-6. *Hon. Lib.* 1900-3. *Hon. Sec.* 1902–4. *Trans.* 1.

1901 HANDLEY, WILLIAM SAMPSON, M.S., M.D. Lond., F.R.C.S. Eng., 51, Devonshire street, Portland place, W. *Trans.* 2.

1892 HAROLD, JOHN, M.B., B.Ch., B.A.O., 91, Harley street, W.

1877 HARPER, GERALD S., M.B. Aber., 40, Curzon street, Mayfair, W. *Council*, 1894-5.

Elected

1898† HARPER, JOHN ROBINSON, L.R.C.P., Bear street, Barnstaple, Devon.

1878† HARRIES, THOMAS DAVIES, F.R.C.S., Grosvenor House, Aberystwith, Cardiganshire.

1867* HARRIS, WILLIAM H., M.D., Deputy Surgeon-General, Shirley, Parklands, Surbiton.

1880* HARRISON, RICHARD CHARLTON, M.R.C.S., L.R.C.P., 19, Uxbridge road, Ealing, W.

1890† HART, DAVID BERRY, M.D.Edin., Assistant Gynæcologist, Royal Infirmary, Edinburgh; 29, Charlotte square, Edinburgh. *Council* 1902–4.

1886† HARTLEY, HORACE, L.R.C.P. Ed., Stone, Staffordshire.

1886 HARTLEY, REGINALD, M.D. Durh., F.R.C.S.Ed., 68, Porchester terrace, Hyde park, W.

1893† HARVEY, JOHN JORDAN, L.R.C.P. & S.Edin., The Aviary, Canning Town, E.

1880 HARVEY, JOHN STEPHENSON SELWYN, M.D.Durh., M.R.C.P., 1, Astwood road, Cromwell road, S.W.

1899† HAWES, GODFREY CHARLES BROWNE, L.R.C.P., Pangbourne, Reading.

1899*†HAWKES, CLAUDE SOMERVILLE, L.R.C.P., Swansea place, Wickham Terrace, Brisbane, Queensland.

1893† HAYDON, THOMAS HORATIO, M.B., B.C. Cantab., 22, High street, Marlborough.

1900 HAYFORD, ERNEST JAMES, M.D., c/o The Agent, Claude's Ashanti Goldfields, Ltd., Cape Coast Castle, Gold Coast, West Africa.

1901† HAYNES, EDWARD JAMES AMBROSE, F.R.C.S.I., Weetalabah, Hay street west, Perth, Western Australia.

1880 HEATH, WILLIAM LENTON, M.D., 90, Cromwell road, Queen's gate, S.W. *Council*, 1891. *Trans.* 1.

1903† HEILBORN, WILLIAM ERNEST, M.B., B.Ch.Cantab., 4, Walmer Villas, Bradford, Yorks.

Elected

1892† HELLIER, JOHN BENJAMIN, M.D.Lond., Lecturer on Diseases of Women and Children, Yorkshire College; Hon. Obstetric Physician to Leeds Infirmary; 27, Park square, Leeds.

1890† HELME, T. ARTHUR, M.D.Edin., M.R.C.P., Senior Assistant Surgeon to the Manchester Clinical Hospital for Women and Children, 3, St. Peter's square, Manchester.

1867† HEMBROUGH, JOHN WILLIAM, M.D., St. Nicholas Chambers, Newcastle-on-Tyne.

1876* HERMAN, GEORGE ERNEST, M.B., F.R.C.P., Obstetric Physician to, and Lecturer on Midwifery at, the London Hospital; 20, Harley street, Cavendish square, W. *Council*, 1878-9, 1898-1901. *Hon. Lib.* 1880-1. *Hon. Sec.* 1882-5. *Vice-Pres.* 1886-7. *Board Exam. Midwives*, 1886-8. *Treas.* 1889-92, 1903-4. *Pres.* 1893-4. *Trans.* 33.

1903 HICKS, HENRY THOMAS, F.R.C.S.Eng., 24, St. Thomas's street, S.E.

1901 HILLIARD, FRANCIS PORTEUS TYRRELL, M.A., M.B.Oxon., Billericay, Essex.

1898 HINDLEY, GODFREY D., L.R.C.P.Lond., 11, Gwendolen avenue, Putney.

1886† HODGES, HERBERT CHAMNEY, L.R.C.P.Lond., Watton-at-Stone, Herts. *Trans.* 1.

1886† HOLBERTON, HENRY NELSON, L.R.C.P.Lond., East Molesey.

1875 HOLLINGS, EDWIN, M.D., 22, Endsleigh gardens, N.W. *Council*, 1888-90. *Vice-Pres.* 1893-4.

1897 HOLLINGS, GUY BERTRAM, M.D., B.S., 22, Endsleigh gardens, N.W.

1859 HOLMAN, CONSTANTINE, M.D., 26, Gloucester place, Portman square, W. *Council*, 1867-9, 1895-6. *Vice-Pres.* 1870-1.

Elected

1891† HOLMAN, ROBERT COLGATE, M.R.C.S., Whithorne House, Midhurst, Sussex.

1864* HOOD, WHARTON PETER, M.D., 11, Seymour street, Portman square, W.

1896† HOPKINS, GEORGE HERBERT, F.R.C.S., 3, North Quay, Brisbane, Queensland.

1883* HORROCKS, PETER, M.D., F.R.C.P.Lond., Obstetric Physician to Guy's Hospital; 42, Brook street, W. *Council*, 1886-7. *Hon. Lib.* 1888-9. *Hon. Sec.* 1890-3. *Vice-Pres.* 1894-6. *Pres.* 1901–2. *Trans.* 2.

1876 HORSMAN, GODFREY CHARLES, L.S.A., 22, King street, Portman square, W.

1883 HOSKIN, THEOPHILUS, L.R.C.P. Lond., 1, Amhurst park, N.

1884† HOUGH, CHARLES HENRY, M.R.C.S., Ambleside, Westmorland.

1879† HUBBARD, THOMAS WELLS, L.R.C.P., L.R.C.S., Barming place, Maidstone.

1901 HUMPHREYS, FRANCIS ROWLAND, L.R.C.P.Lond., 27, Fellows road, N.W.

1884*†HURRY, JAMIESON BOYD, M.D. Cantab., 43, Castle street, Reading. *Council*, 1887-9. *Vice.-Pres.* 1897-1900. *Trans.* 2.

1878* HUSBAND, WALTER EDWARD, M.R.C.S., L.R.C.P., Grove Lea, Lansdown, Bath.

1895 HUXLEY, HENRY, L.R.C.P.Lond., 39, Leinster gardens, Hyde park, W.

1894† ILOTT, HERBERT JAMES, M.D: Aber., 57, High street, Bromley, Kent.

1901† INGLIS, ARTHUR STEPHEN, M.D.Aber., 5, Pevensey road, St. Leonards-on-sea.

1902 INGLIS, JOHN, M.D., 18, Cornwallis gardens, Hastings.

1902† IONIDES, THEODORE HENRY, M.B., B.S.Lond., 25, First avenue, Brighton.

Elected

1903 IRONSIDE, ROBERT ADRIAN, M.D., C.M.Aber., Campbell House, Fitzjohn's avenue, N.W.

1884*†IRWIN, JOHN ARTHUR, M.A., M.D., 14, West Twenty-ninth street, New York.

1883† JACKSON, GEORGE HENRY, M.R.C.S., Ashburton, Carew road, Eastbourne.

1897 JÄGER, HAROLD, M.B. Lond., 6, Darnley road, Royal crescent, W.

1873† JAKINS, WILLIAM VOSPER, L.R.C.P. Ed., 14, Collins street East, Melbourne.

1890† JAMES, CHARLES HENRY, L.R.C.P.Lond., Major, Indian Medical Service; Lahore, Punjab, India.

1883*†JENKINS, EDWARD JOHNSTONE, M.D. Oxon., 213, Macquarie street, Sydney.

1882* JENNINGS, CHARLES EGERTON, M.D. Durh., F.R.C.S. Eng., Assistant Surgeon to the North-West London Hospital; Burke House, Beaconsfield.

1901*†JOHNSON, EDWARD ANGUS, M.B., B.S.Melb., L.R.C.P. Lond., "St. Catharine's" Prospect, South Australia.

1900 JOHNSON, HENRY HEATH POCHIN, L.R.C.P., Ferry Hill, near Durham.

1868† JONES, EVAN, M.R.C.S., Ty-Mawr, Aberdare, Glamorganshire. *Council*, 1886-8. *Vice.-Pres.* 1890-1. *Hon. Loc. Sec.*

1894 JONES, EVAN, L.R.C.P. Lond., 89, Goswell road, E.C.

1902† JONES, EVAN JAMES TREVOR, M.D.Brux., Ty-Mawr, Aberdare, Glamorganshire.

1895† JONES, GEORGE HORATIO, M.R.C.S., Deddington, Oxon.

1894† JONES, JOHN ARNALLT, M.D.Durh., Heathmont, Aberavon, Port Talbot, Glamorganshire.

1887† JONES, J. TALFOURD, M.B. Lond. Consulting Physician to the Breconshire Infirmary, St. David's, 1, Lascelles terrace, Eastbourne.

1873† JONES, PHILIP W., M.R.C.S., L.R.C.P., River House, Enfield.

Elected

1886† JONES, WILLIAM OWEN, M.R.C.S., The Downs, Bowdon, Cheshire.

1903 JORDAN, JOHN FURNEAUX, M.B., F.R.C.S., 9, Newhall street, Birmingham.

1884 KEATES, WILLIAM COOPER, L.R.C.P., 20, East Dulwich road, S.E.

1883† KEELING, JAMES HURD, M.D., 267, Glossop road, Sheffield. *Hon. Loc. Sec.*

1896 KEEP, ARTHUR CORRIE, M.D., C.M.Edin., Surgeon to Out-patients to the Samaritan Free Hospital; 14, Gloucester place, Portman square, W. *Council*, 1902-4.

1894 KELLETT, ALFRED FEATHERSTONE, M.B., B.C.Cantab., 142, Lewisham road, S.E.

1886 KENNEDY, ALFRED EDMUND, L.R.C.P. Ed., Chesterton House, Plaistow, E.

1879 KER, HUGH RICHARD, L.R.C.P.Ed., Tintern, 2, Balham hill, S.W.

1895† KERR, JOHN MARTIN MUNRO, M.B., C.M.Glasg.; Obstetric Physician to the Glasgow Maternity Hospital; 28, Berkeley terrace, Glasgow. *Trans.* 1.

1877*†KERSWILL, JOHN BEDFORD, M.R.C.P. Ed., Fairfield, St. German's, Cornwall.

1878† KHORY, RUSTONJEE NASERWANJEE, M.D., M.R.C.P., Medical Syndic, Bombay University; Honorary Physician, Bai Motlibai Obstetric and Gynæcological Hospital; Hormazd Villa, Khumballa hill, Bombay.

O.F.* KIALLMARK, HENRY WALTER, M.R.C.S., 5, Pembridge gardens, Bayswater. *Council*, 1879-80.

1872* KISCH, ALBERT, M.R.C.S., 61, Portsdown road, W. *Council*, 1896-7.

1876*†KNOTT, CHARLES, M.R.C.P. Ed., Liz Ville, Elm grove, Southsea.

Elected

1889 LAKE, GEORGE ROBERT, M.R.C.S., 177, Gloucester terrace, Hyde park, W.

1867* LANGFORD, CHARLES P., M.R.C.S., Sunnyside, Hornsey lane, N.

1894† LEA, ARNOLD W. W., M.D., B.S.Lond., F.R.C.S., Lecturer on Midwifery and Diseases of Women, Owens College; 274, Oxford road, Manchester. *Council*, 1903-4. *Trans.* 2.

1901 LEAHY-LYNCH, TIMOTHY, L.R.C.P., L.M.Edin., 2, Finsbury park road, N.

1884*†LEDIARD, HENRY AMBROSE, M.D., 35, Lowther street, Carlisle. *Council*, 1890-2. *Trans.* 1.

1903† LEICESTER, JOHN CYRIL HOLDICH, M.D., B.S., F.R.C.S. Eng., Captain, Indian Medical Service, c/o Messrs. William Watson, Calcutta.

1902† LENDON, ALFRED AUSTIN, M,D.Lond., North terrace, Adelaide, South Australia.

1897 LESLIE, WILLIAM MURRAY, M.D. Edin., 74, Cadogan place, Belgrave square, S.W.

1900* LEVISON, HUGO ADOLF, M.D.(Columbia Univ.), L.R.C.P. Lond., 44, West 35th street, New York.

1885 LEWERS, ARTHUR H. N., M.D. Lond., F.R.C.P., Obstetric Physician to the London Hospital; 72, Harley street, W. *Council*, 1887-9, 1893, 1901-3. *Board Exam. Midwives*, 1895-7. *Hon. Lib.* 1904. *Trans.* 13.

1902 LEWIS, ERNEST WOOL, L.R.C.P., M.R.C.S., The Hermitage, Fulham Palace road, S.W.

1901† LITTLEWOOD, HARRY, F.R.C.S., 25, Park square, Leeds. *Trans.* 1.

1894 LIVERMORE, WILLIAM LEPPINGWELL, L.R.C.P. Lond., 52, Stapleton Hall road, Stroud green, N.

1899 LOCKYER, CUTHBERT, M.D., B.S.Lond., F.R.C.S., 117A, Harley street, W. *Council*, 1904. *Trans.* 5.

1893† LOGAN, RODERIC ROBERT WALTER, M.R.C.S., Church street, Ashby-de-la-Zouch.

1893† LOWE, WALTER GEORGE, M.D. Lond., F.R.C.S., Burton-on-Trent.

Elected

1878*†LYCETT, JOHN ALLAN, M.D., Gatcombe, Consulting Gynæcologist to the Wolverhampton and District Hospital for Women, Wolverhampton.

1902† LYNN, EDWARD, M.R.C.S., 638, Woolwich road, New Charlton, Kent.

1896† LYONS, A., M.B., Thames Ditton.

1871† MCCALLUM, DUNCAN CAMPBELL, M.D., Emeritus Professor McGill University; 45, Union avenue, Montreal, Canada. *Trans.* 4.

1890 MCCANN, FREDERICK JOHN, M.D., C.M.Edin., F.R.C.S. Eng., M.R.C.P., Physician to In-patients at the Samaritan Hospital; 5, Curzon street, Mayfair, W. *Council*, 1897-8. *Board Exam. Midwives*, 1904. *Trans.* 3.

1894† MCCAUSLAND, ALBERT STANLEY, M.D. Brux., Churchill House, Swanage.

1890 MCCAW, J. DYSART, M.D., F.R.C.S., Wallington, Surrey. *Council*, 1898-1900.

1894† MCDONNELL, ÆNEAS JOHN, M.D., Ch.M. Sydney, Toowoomba, Queensland.

1896 M'DONNELL, W. CAMPBELL, L.R.C.P. Lond., Park House, Park lane, Stoke Newington, N.

1892† MCKAY, W. J. STEWART, M.B., M.Ch.Sydney, Australian Club, Macquarie street, Sydney, N.S.W.

1897† MCKERRON, ROBERT GORDON, M.B. Aberd., 1, Albyn place, Aberdeen. *Trans.* 2.

1900† MACAN, JAMESON JOHN, M.A., M.D.Cantab., Crossgates, Cheam, Surrey.

1893 MACLEAN, EWEN JOHN, M.D., F.R.S.Edin., M.R.C.P.Lond., Senior Gynæcologist to Cardiff Infirmary; 12, Park place, Cardiff. *Council*, 1900.

1899 MACLEOD, WILLIAM AITKEN, M.B., C.M.Edin., 9, Pembridge villas, Bayswater, W.

1902 MCMAHON-DILLON, H. V., Capt. R.A.M.C., L.R.C.S.I., 2, Scarsdale Villas, Kensington.

Elected

1886 McMullen, William, L.K.Q.C.P.I., 319a, Brixton road, S.W.

1878*†Macnaughton-Jones, H., M.D., M.A.O. (Hon. Causâ), F.R.C.S.I. & Edin., 131, Harley street, Cavendish square, W. *Trans.* 1.

1898 Macnaughton-Jones, Henry, M.B., B.Ch., 12, Sandwell mansions, West End lane, N.W.

1894† McOscar, John, L.R.C.P.Lond., The Shrubbery, Woking.

1899† Maguire, George J., M.B., B.Ch., Kew road, Richmond. *Trans.* 1.

1895† Maidlow, William Harvey, M.D.Durh., F.R.C.S.Eng., Ilminster, Somerset.

1884 Malcolm, John D., M.B., C.M., Surgeon to the Samaritan Free Hospital; 13, Portman street, W. *Council*, 1894-6. *Trans.* 2.

1871† Malins, Edward, M.D., Obstetric Physician to the General Hospital, Professor of Midwifery at Mason College, Birmingham; 50, Newhall street, Birmingham. *Council*, 1881-3. *Vice-Pres.* 1884-6, 1901-2. *Pres.* 1903–4. *Hon. Loc. Sec.*

1903† Malins, Herbert, B.A.Oxon., M.B.Edin., 50, Newhall street, Birmingham.

1868*†March, Henry Colley, M.D., Portisham, Dorchester. *Council*, 1890-2.

1887 Mark, Leonard P., M.D.Durh., 61, Cambridge street, Hyde-park, W.

1862*†Marriott, Robert Buchanan, M.R.C.S., Swaffham, Norfolk.

1887† Marsh, O. E. Bulwer, L.R.C.P. Ed., Parkdale, Clytha park, Newport, Monmouthshire.

1890† Martin, Christopher, M.B., C.M.Edin., F.R.C.S.Eng., Surgeon to the Birmingham and Midland Hospital for Women; 35, George road, Edgbaston, Birmingham. *Trans.* 1.

1883† Maurice, Oliver Calley, M.D.Heidelb., 75, London street, Reading. *Council*, 1888-90.

Elected

1899† MAXWELL, JOHN PRESTON, M.B.Lond., F.R.C.S., 31, Hammelton road, Bromley, Kent. *Trans.* 1.

1890 MAY, CHICHESTER GOULD, M.A., M.D.Cantab., Assistant Physician to the Grosvenor Hospital for Women and Children; 59, Cadogan place, S.W.

1884† MAYNARD, EDWARD CHARLES, L.R.C.P.Ed., 39, Wynnstay gardens, Kensington.

1886 MENNELL, ZEBULON, M.R.C.S., 1, Royal crescent, Notting hill, W.

1898 MENZIES, HENRY, M.B.Cantab., 4, Ashley gardens, S.W.

1882 MEREDITH, WILLIAM APPLETON, M.B., C.M., F.R.C.S.Eng., Surgeon to the Samaritan Free Hospital for Women and Children; 21, Manchester Square, W. *Council*, 1886-8. *Vice-Pres.* 1891-3. *Trans.* 3.

1893† MICHIE, HARRY, M.B. Aber., 27, Regent street, Nottingham.

1875*†MILES, ABIJAH J., M.D., Professor of Diseases of Women and Children in the Cincinnati College of Medicine, Cincinnati, Ohio, U.S.

1895† MILLER, JAMES THOMAS ROGER, L.S.A., Castlegate House, Malton, Yorkshire.

1902 MILLIGAN, WYNDHAM ANSTRUTHER, M.B., C.M.Aber., 104, Bethune road, N.

1876* MILLMAN, THOMAS, M.D., 490, Huron street, Toronto, Ontario, Canada.

1880† MILLS, ROBERT JAMES, M.B., M.C., 35, Surrey street, Norwich.

1892† MILTON, HERBERT M. NELSON, M.R.C.S., Kasr-el-Aini Hospital, Cairo, Egypt.

1869*†MINNS, PEMBROKE R. J. B., M.D., Thetford, Norfolk.

1867* MITCHELL, ROBERT NATHAL, M.D., Brookwood, Hollington, St. Leonard's-on-Sea.

1877 MOON, FREDERICK, M.B., 20, Bryanston street, Portman square, W.

Elected

1859† MOORHEAD, JOHN, M.D., Surgeon to the Weymouth Infirmary and Dispensary; Weymouth, Dorset.

1895 MORISON, HENRY BANNERMANN, M.B. Durh., Lindley Lodge, Mottingham, Eltham, S.E.

1890 MORRIS, CHARLES ARTHUR, M.A., M.B., B.C.Cantab., F.R.C.S., 29, Eccleston street, Eaton square, S.W.

1883 MORRIS, CLARKE KELLY, M.R.C.S., Gordon Lodge, Charlton road, Blackheath, S.E.

1899 MORRIS, EDWIN HUGH GRANT, M.B., B.C.Cantab., 47, Onslow gardens, S.W.

1893† MORSE, THOMAS HERBERT, F.R.C.S., All Saints' green, Norwich. *Trans.* 1.

1896 MUGFORD, SIDNEY ARTHUR, L.R.C.P., 135, Kennington park road, S.E.

1893 MUIR, ROBERT DOUGLAS, M.D., The Limes, New Cross road, S.E.

1896† MURPHY, JAMES KEOGH, M.A., M.D., B.C.Cantab., 35, Princes square, Bayswater, W.

1885 MURRAY, CHARLES STORMONT, L.R.C.S. and L.M.Ed., 85, Gloucester place, Portman square, W.

1893† MURRAY, ROBERT MILNE, M.B. Edin., 11, Chester street, Edinburgh.

1893† NAIRNE, JOHN STUART, F.R.C.S. Ed., 141, Hill street, Garnethill, Glasgow.

1896† NARIMAN, R. T., M.D. Brux., Parsi Lying-in Hospital, Bombay.

1902† NARIMAN, TEMULFI BHICAFI, L.M.&F.Bombay, Bombay, India.

1892† NASH, W. GIFFORD, F.R.C.S., Senior Surgeon to the Bedford County Hospital, Clavering House, De Parys avenue, Bedford.

1902† NEWLAND, H. SIMPSON, M.B.Adel., F.R.C.S.Eng., Adelaide, South Australia.

1859*† NEWMAN, WILLIAM, M.D., Surgeon to the Stamford and Rutland Infirmary; Barn Hill House, Stamford, Lincolnshire. *Council*, 1873-5. *Vice-Pres.* 1876-7. *Trans.* 5.

Elected

1889† NEWNHAM, WILLIAM HARRY CHRISTOPHER, M.A., M.B. Cantab., Physician-Accoucheur to the Bristol General Hospital; Chandos Villa, Queen's road, Clifton, Bristol.

1895† NEWSTEAD, JAMES, M.R.C.S., 9, York place, Clifton, Bristol.

1893† NICHOL, FRANK EDWARD, M.A., M.B., B.C. Cantab., 1, Ethelbert crescent, Margate.

1873† NICHOLSON, ARTHUR, M.B. Lond., 30, Brunswick square, Brighton. *Council*, 1897-9.

1876* NIX, EDWARD JAMES, M.D., 11, Weymouth street, W. *Council*, 1889-90.

1903 NOLAN, WILLIAM, L.R.C.P. & S.I., L.M.Dubl., 28, Upper Phillimore place, Kensington.

1882† NORMAN, JOHN EDWARD, M.D.Durham, Lismore House, Hebburn-on-Tyne.

1903† NOTT, ARTHUR HOLBROOK, M.B.Durh., Major, Indian Medical Service, c/o Messrs. Grindlay & Co., Calcutta.

1903† NUTHALL, ALEXANDER WATHEN, F.R.C.S.Eng., 22, Wheelys road, Edgbaston, Birmingham.

1888 OLIVER, FRANKLIN HEWITT, L.R.C.P. Lond., 2, Kingsland road, N.E.

1899† OSBORN, FRANCIS ARTHUR, L.R.C.P.Lond., Ennismore House, Dover.

1877† OSTERLOH, PAUL RUDOLPH, M.D. Leipzic, Physician for Diseases of Women, Diaconissen Hospital; Wienerstrasse 8, Dresden.

1892 OWEN, SAMUEL WALSHE, L.R.C.P.Lond., 10, Shepherd's Bush road, W.

1902 OXLEY, ALFRED JAMES RICE, M.D.Dubl., 7, Courtfield road, S.W.

1889* PAGE, HARRY MARMADUKE, M.D.Brux., F.R.C.S., 14, Grenville place, S.W.

1891† PAGE, HERBERT MARKANT, M.D.Brux., The Grange, Langport, Somersetshire.

Elected

1877* PARAMORE, RICHARD, M.D., 2, Gordon square, W.C.

1867*†PARKS, JOHN, M.R.C.S., Bank House, Manchester road, Bury, Lancashire.

1887 PARSONS, JOHN INGLIS, M.D.Durh., M.R.C.P., Physician to the Chelsea Hospital for Women, 3, Queen street, Mayfair, W. *Trans.* 2.

1880 PARSONS, SIDNEY, M.R.C.S., 78, Kensington Park road, W.

1899 PAUL, J. E., M.D., 26, Queensborough terrace, Bayswater, W.

1902 PAYNE, EDWARD MARTEN, M.B., C.M., 38, Chichele road, Cricklewood, N.W.

1882* PEACEY, WILLIAM, M.D., Rydal Mount, St. John's road, Eastbourne.

1894 PEAKE, SOLOMON, M.R.C.S., 118, Percy road, Shepherd's Bush, W.

1899 PECK, FRANCIS SAMUEL, M.R.C.S.Eng., Major, Indian Medical Service; 6, Harington street, Calcutta.

1871* PEDLER, GEORGE HENRY, M.R.C.S., L.R.C.P., 6, Trevor terrace, Rutland gate, S.W. *Council*, 1897-8.

1880*†PEDLEY, THOMAS FRANKLIN, M.D., Rangoon, India. *Trans.* 1.

1898 PENNY, ALFRED GERVASE, M.A., M.B., B.C.Cantab.

1881† PERIGAL, ARTHUR, M.D., New Barnet, Herts. *Council*, 1892–3.

1893 PERKINS, GEORGE C. STEELE, M.D., 85, Wimpole street, W.

1879*†PESIKAKA, HORMASJI DOSABHAI, 23, Hornby row, Bombay.

1894 PETTY, DAVID, M.B., C.M.Edin., 6, High road, South Tottenham, N.E.

1903† PHILBRICK, JOHN HAROLD, M.B., B.Ch.Cantab., Ingatestone, Essex.

1879 PHILLIPS, GEORGE RICHARD TURNER, M.R.C.S., 28, Palace court, Bayswater hill, W. *Council*, 1891.

Elected

1882 PHILLIPS, JOHN, M.A., M.D. Cantab., F.R.C.P., Obstetric Physician to King's College Hospital, and Lecturer on Practical Obstetrics in King's College; 68, Brook street, W. *Council*, 1887-9, 1893. *Hon. Lib.* 1894-5. *Hon. Sec.* 1896-9. *Board Exam. Midwives*, 1892-4. *Vice-Pres.* 1900-3. *Trans.* 11.

1897 PHILLIPS, LLEWELLYN C. P., M.B., B.C. Cantab., St. Bartholomew's Hospital, E.C.

1878* PHILPOT, JOSEPH HENRY, M.D., 61, Chester square, S.W. *Council*, 1891.

1889† PINHORN, RICHARD, L.R.C.P. Lond., 5, Cambridge terrace, Dover. *Council*, 1897-9.

1893 PLAYFAIR, HUGH JAMES MOON, M.D.Lond., Assistant Physician, Hospital for Women and Children, Waterloo road; 7, Upper Brook street, Grosvenor square, W. *Council*, 1900.

1891* POLLOCK, WILLIAM RIVERS, M.B., B.C.Cantab., Assistant Obstetric Physician to the Westminster Hospital, 56, Park street, Grosvenor square, W. *Council*, 1895-7, 1902-4. *Board Exam. Midwives*, 1898-9.

1876* POPE, H. CAMPBELL, M.D., F.R.C.S., Broomsgrove Villa, 280, Goldhawk road, Shepherd's Bush, W. *Council*, 1902-4.

1891† POPE, HENRY SHARLAND, M.B., B.C.Cantab., Castle Bailey, Bridgwater.

1888* POPHAM, ROBERT BROOKS, M.R.C.P. Edin., L.R.C.P.Lond., "Beancroft," Queen's road, Boscombe, Hants.

1903† POTTS, WILLIAM ALEXANDER, B.A.Cantab., M.D.Edin., 160, Hagley road, Birmingham.

1893 POWELL, HERBERT EDWARD, M.R.C.S., Manor Lodge, Upper Clapton, N.E.

1901 POWELL, LLEWELLYN, M.B., B.C.Cantab., 37, Brunswick gardens, Campden Hill, W.

1886 PRANGLEY, HENRY JOHN, L.R.C.P. Lond., Tudor House, 197, Anerley road, Anerley, S.E.

Elected

1880* PRICKETT, MARMADUKE, M.A.Cantab., M.D., Physician to the Samaritan Hospital; 27, Oxford square, W. *Council*, 1892.

1895 PRIESTLEY, R. C., M.A., M.B.Cantab., 81, Linden gardens, Bayswater, W.

1898† PURSLOW, CHARLES EDWIN, M.D., M.R.C.P.Lond., Honorary Obstetric Officer, Queen's Hospital, Birmingham; 192, Broad street, Birmingham.

1876*†QUIRKE, JOSEPH, M.R.C.P. Ed., The Oaklands, Hunter's road, Handsworth, Birmingham.

1878† RAWLINGS, JOHN ADAMS, M.R.C.P.Ed., 14, Northampton place, Swansea.

1897 RAWLINGS, J. D., M.B.Lond., Rose Hill House, Dorking.

1870* RAY, EDWARD REYNOLDS, M.R.C.S., 15A, Upper Brook street, W. *Council*, 1902-4.

1894† RAYNER, HERBERT EDWARD, F.R.C.S., Harcourt House, Camberley, Surrey.

1899† RAYNER, DAVID CHARLES, F.R.C.S.Eng., 9, Lansdowne place, Victoria square, Clifton, Bristol.

1860* RAYNER, JOHN, M.D., Swaledale House, Highbury quadrant, N.

1879 READ, THOMAS LAURENCE, M.R.C.S., 11, Petersham terrace, Queen's gate, S.W. *Council*, 1892.

1879† REID, WILLIAM LOUDON, M.D., Professor of Midwifery and Diseases of Women and Children, Anderson's College; Physician to the Glasgow Maternity Hospital; 7, Royal crescent, Glasgow. *Council*, 1899-1901-2.

1893† RENSHAW, ISRAEL JAMES EDWARD, F.R.C.S.Edin., Ashton Grange, Cross street, Ashton-upon-Mersey.

1875*†REY, EUGENIO, M.D., 39, Via Cavour, Turin.

1890 REYNOLDS, JOHN, M.D.Brux., 11, Brixton hill, S.W.

1872*†RICHARDSON, WILLIAM L., M.D., A.M., Professor of Obstetrics in Harvard University; Physician to the Boston Lying-in Hospital; 225, Commonwealth avenue, Boston, Massachusetts, U.S.

Elected

1889† RICHMOND, THOMAS, L.R.C.P. Ed., 22, Holyrood crescent, Glasgow.

1871* RIGDEN, WALTER, M.D. St. And., 16, Thurloe place, S.W. *Council*, 1882-3. *Trans.* 1.

1892 ROBERTS, CHARLES HUBERT, M.D.Lond., F.R.C.S.Eng., M.R.C.P., Physician to Out-patients to Queen Charlotte's Hospital; Demonstrator of Practical Midwifery and Diseases of Women, St. Bartholomew's Hospital; 21, Welbeck street, Cavendish square. *Council*, 1897-9. *Board Exam. Midwives*, 1901. *Trans.* 4.

O.F.*† ROBERTS, DAVID LLOYD, M.D., F.R.C.P., F.R.S. Edin., Consulting Obstetric Physician to the Manchester Royal Infirmary; and Lecturer on Clinical Midwifery and the Diseases of Women in Owens College; 11, St. John street, Deansgate, Manchester. *Council*, 1868-70, 1880-2. *Vice-Pres.* 1871-2. *Board Exam. Midwives*, 1900-4. *Trans.* 5.

1867* ROBERTS, DAVID W., M.D., 56, Manchester street, Manchester square, W.

1890† ROBERTS, HUGH JONES, M.R.C.S., Llywenarth, Penygroes, R.S.O., N. Wales.

1893 ROBERTS, THOMAS, L.S.A., 2, Selbourne gardens, York road, Ilford, Essex.

1874* ROBERTSON, WILLIAM BORWICK, M.D., St. Anne's, Thurlow park road, West Dulwich, S.E.

1892 ROBINSON, GEORGE H. DRUMMOND, M.D., B.S. Lond., Assistant Obstetric Physician, West London Hospital; 84, Park street, Grosvenor square, W. *Council*, 1899-1900. *Board Exam. Midwives*, 1898-1900. *Trans.* 2.

1887 ROBINSON, HUGH SHAPTER, L.R.C.P. Ed., Talfourd House, 78, Peckham road, Camberwell, S.E.

1895† ROBSON, ALFRED WILLIAM, M.D.Brux., Kempstow House, 111, Park road, Aston, Birmingham.

1890† ROBSON, A. W. MAYO, F.R.C.S., 8, Park crescent, Portland place, W.

Elected

1876†*Roe, John Withington, M.D., Ellesmere, Salop.

1874*†Roots, William Henry, M.R.C.S., Canbury House, Kingston-on-Thames.

1903† Rose, Alexander Macgregor, M.B., Ch.B., 15, Victoria street, Aberdeen, N.B.

1893† Rosenau, Albert, M.D., Hôtel Victoria, Kissingen, Bavaria. (*Winter*, Avenue la Costa, Monte Carlo.)

1884† Rossiter, George Frederick, M.B., Surgeon to the Weston-super-Mare Hospital; Cairo Lodge, Weston-super-Mare.

1902 Rotheroe, W. Bursiem, L.R.C.S.&P.Edin., 47, Gloucester place, Portman square, W.

1884† Roughton, Walter, F.R.C.S., Cranborne House, New Barnet.

1882* Routh, Amand, M.D., B.S., F.R.C.P., Obstetric Physician and Lecturer on Midwifery at Charing Cross Hospital; 14a, Manchester square, W. *Council*, 1886-8, 1896-7. *Board Exam. Midwives*, 1893-5. *Hon. Lib.* 1898-9. *Hon. Sec.* 1900-3. *Vice-Pres.* 1904. *Trans.* 5.

O.F.* Routh, Charles Henry Felix, M.D., Consulting Physician to the Samaritan Free Hospital for Women and Children; 52, Montagu square, W. *Council*, 1859-61. *Vice-Pres.* 1874-6. *Trans.* 13.

1887*†Rowe, Arthur Walton, M.D. Dur., 1, Cecil street, Margate.

1886 Rushworth, Frank, M.D. Lond., 153, Finchley road, South Hampstead, N.W.

1886† Rutherfoord, Henry Trotter, M.A., M.D. Cantab., Salisbury House, Taunton. *Council*, 1892-3. *Trans.* 1.

1866*†Saboia, Baron V. de, M.D., Director of the School of Medicine, Rio de Janeiro; 7, Rua dom Affonso, Petropolis, Rio Janeiro. *Trans.* 2.

1864*†Salter, John H., M.R.C.S., D'Arcy House, Tolleshunt d'Arcy, Kelvedon, Essex. *Council*, 1894-6.

Elected

1868* SAMS, JOHN SUTTON, M.R.C.S., St. Peter's Lodge, Eltham road, Lee, S.E. *Council*, 1892.

1886† SANDERSON, ROBERT, M.B. Oxon., 56, Brunswick square, Brighton.

1872 SANGSTER, CHARLES, M.R.C.S., 148, Lambeth road, S.E.

1903† SAVAGE, SMALLWOOD, M.B.Oxon., F.R.C.S.Eng., 133, Edmund street, Birmingham.

1877 SAVORY, CHARLES TOZER, M.D., 25, Grange road, Canonbury, N. *Trans.* 1.

1894† SAVORY, HORACE, M.A., M.B., B.C.Cantab., Assistant Physician to Bedford County Hospital, 45, Harpur street, Bedford. *Trans.* 1.

1890 SCHACHT, FRANK FREDERICK, B.A., M.D.Cantab., 153, Cromwell road, S.W.

1902 SCHARLIEB, MARY ANN DACOMB, M.D.Lond., M.S., B.S., 149, Harley street, W.

1888 SCOTT, PATRICK CUMIN, B.A., M.B. Cantab., 38, Shooter's Hill road, Blackheath, S.E.

1882 SERJEANT, DAVID MAURICE, M.D., 27, Peckham road, S.E.

1875 SETON, DAVID ELPHINSTONE, M.D., 1, Emperor's gate, S.W. *Council*, 1884.

1896† SHARMAN, MARK, M.B., C.M.Glas., Rickmansworth.

1894† SHARPIN, ARCHDALE LLOYD, L.R.C.P. Lond., Kimbolton house, Bedford.

1887 SHAW, JOHN, M.D. Lond., Obstetric Physician to the North-West London Hospital; 32, New Cavendish street, Cavendish square, W. *Trans.* 3.

1891 SHAW-MACKENZIE, JOHN ALEXANDER, M.D. Lond., 42, Green street, Park lane, W.

1900† SHEPHERD, THOMAS WILLIAM, L.R.C.S.Edin., Castle Hill House, Launceston.

1902 SIKES, ALFRED WALTER, M.D., B.Sc.Lond., 40, Argyll road, Campden hill, W.

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Elected

1888† SINCLAIR, WILLIAM JAPP, M.D. Aber., Honorary Physician to the Southern Hospital for Women and Children and Maternity Hospital, Manchester; and Professor of Obstetrics and Gynæcology, Owens College, Manchester; 250, Oxford road, Manchester. *Council*, 1899-1902. *Vice-Pres.*, 1903-4. *Trans.* 1.

1881† SLOAN, ARCHIBALD, M.B., 21, Elmbank street, Glasgow.

1876† SLOAN, SAMUEL, M.D., C.M., 5, Somerset place, Sauchiehall street west, Glasgow.

1890† SLOMAN, FREDERICK, M.R.C.S., 18, Montpellier road, Brighton.

1903 SMITH, ARTHUR LIONEL HALL, L.R.C.P., M.R.C.S.Lond., 16, New Cavendish street, W.

1901 SMITH, GUY BELLINGHAM, M.B., B.S.Lond., F.R.C.S., 24, St. Thomas's street, S.E.

1867* SMITH, HEYWOOD, M.D., 25, Welbeck street, Cavendish square, W. *Council*, 1872-5. *Board Exam. Midwives* 1874-6. *Trans.* 6.

1875 SMITH, RICHARD THOMAS, M.D., Physician to the Hospital for Women, Soho square; 117, Haverstock hill, N.W.

1886† SMITH, SAMUEL PARSONS, L.K.Q.C.P.I., Park Hyrst, Addiscombe road, Croydon.

1899*†SMYLY, WILLIAM JOSIAH, M.D., F.R.C.P.I., 58, Merrion square, Dublin.

1899† SMITHSON, OLIVER, L.R.C.P., New Bedford road, Luton, Beds.

1895 SODEN, WILFRED NEWELL, M.B.Lond., Upcote, Mapesbury road, Brondesbury, N.W.

1868* SPAULL, BARNARD E., M.R.C.S., L.R.C.P., 1, Stanwick road, West Kensington, W.

1888* SPENCER, HERBERT R., M.D., B.S.Lond., F.R.C.P., Professor of Midwifery in University College, London, and Obstetric Physician to University College Hospital; 104, Harley street, W. *Council*, 1890-92. *Board Exam. Midwives*, 1896-7. *Hon. Sec.* 1898-1901. *Vice-Pres.*, 1902-4. *Trans.* 8.

Elected

1876† SPENCER, LIONEL DIXON, M.D., Brigade-Surgeon, I.M.S., Bengal Establishment [care of Messrs. Grindlay and Co., 55, Parliament street, S.W.].

1882* SPOONER, FREDERICK HENRY, M.D., Maitland Lodge, Maitland place, Clapton, N.E.

1876† SPURGIN, HERBERT BRANWHITE, M.R.C.S., 82, Abington street, Northampton.

1897 STABB, ARTHUR FRANCIS, M.B., B.C. Cantab., Assistant Obstetric Physician to St. George's Hospital, and Lecturer in Midwifery in the University of Cambridge; 132, Harley street, W. *Council*, 1899-1901. *Board Exam. Midwives*, 1903-4.

1894 STEVENS, THOMAS GEORGE, M.D., B.S. Lond., 8, St. Thomas's street, S.E. *Council*, 1902-3. *Board Exam. Midwives*, 1904. *Trans.* 2.

1884† STEVENSON, EDMOND SINCLAIR, F.R.C.S. Ed., Strathallan House, Rondebosch, Cape of Good Hope. *Trans.* 2.

1877† STEPHENSON, WILLIAM, M.D., Professor of Midwifery, University of Aberdeen; 3, Rubislaw terrace, Aberdeen. *Council*, 1881-3. *Vice-Pres.*, 1887-9. *Trans.* 2.

1875*†STEWART, WILLIAM, F.R.C.P. Ed., 26, Lethbridge road, Southport.

1884 STIVENS, BERTRAM H. LYNE, M.D.Brux., 107, Park street, Grosvenor square, W.

1883 STOCKS, FREDERICK, M.R.C.S., 421, Wandsworth road, S.W.

1894† STOTT, WILLIAM ATKINSON, M.R.C.S., L.R.C.P. Lond., 2, Hillary place, Woodhouse lane, Leeds.

1866* STRANGE, WILLIAM HEATH, M.D., 2, Belsize avenue, Belsize park, N.W. *Council*, 1882-4.

1898† STURMER, ARTHUR JAMES, M.R.C.S., L.R.C.P., Lieut.-Col., Indian Medical Service, Madras. *Trans.* 1.

1884 SUNDERLAND, SEPTIMUS, M.D., M.R.C.P., Physician to the Royal Hospital for Children and Women; 11, Cavendish place, Cavendish square, W.

Elected

1894 SWALLOW, ALLAN JAMES, M.B., B.S. Durh., Taunton House, 404, Clapham road, S.W.

1896 SWAN, CHARLES ATKIN, M.B., B.Ch.Oxon., 4, Devonport street, Hyde Park, W.

1901 SWANTON, JAMES HUTCHINSON, M.D., M.Ch., 40, Harley street, W.

1893 SWAYNE, FRANCIS GRIFFITHS, M.A., M.B., B.C.Cantab., 140, Church road, Norwood, S.E.

1892† SWAYNE, WALTER CARLESS, M.D.Lond., Obstetric Physician, Bristol Royal Infirmary; Professor of Midwifery in University College, Bristol; Mathon house, 56, St. Paul's road, Clifton. *Council*, 1903-4.

1888* SWORN, HENRY GEORGE, L.K.Q.C.P. & L.M., 5, Highbury crescent, N.

1883 TAIT, EDWARD SABINE, M.D., 48, Highbury park, N. *Council*, 1892-4. *Trans.* 1.

1880*†TAKAKI, KANAHEIRO, F.R.C.S., 10, Nishi-Konyachō, Kiōbashika, Tokio, Japan. *Hon. Loc. Sec.*

1891 TARGETT, JAMES HENRY, M.B., M.S. Lond., F.R.C.S., Assistant Obstetric Surgeon to Guy's Hospital, 6, St. Thomas's street, S.E. *Council*, 1895. *Board Exam. Midwives*, 1900-2.

1892* TATE, WALTER WILLIAM HUNT, M.D.Lond., Obstetric Physician to, and Lecturer on Midwifery and the Diseases of Women at, St. Thomas's Hospital; 32, Queen Anne street, Cavendish square, W. *Council*, 1895-7. *Board Exam. Midwives*, 1898-9. *Trans.* 1.

1871 TAYLER, FRANCIS T., B.A. Lond., M.B., Claremont villa, 224, Lewisham High road, S.E. *Council*, 1902-3.

1900 TAYLOR, FRANK EDWARD, M.A., M.B., Chelsea Hospital for Women, Fulham road, S.W.

1890*†TAYLOR, JOHN WILLIAM, F.R.C.S., Surgeon to the Birmingham and Midland Hospital for Women; Professor of Gynæcology, Birmingham University; 22, Newhall street, Birmingham. *Council*, 1900-2. *Trans.* 4.

Elected

1892 TAYLOR, WILLIAM BRAMLEY, M.R.C.S., 145, Denmark hill, S.E.

1894† TENCH, MONTAGUE, M.D. Brux., L.R.C.P. Lond., Great Dunmow, Essex.

1902† TENNANT, JOHN, M.A., M.B., C.M.Edin., 39, University road, Belfast.

1890† THOMAS, BENJAMIN WILFRED, L.R.C.P. Lond., Welwyn.

1899† THOMAS, J. RAGLAN, M.D., 13, West Southernhay, Exeter.

1887† THOMAS, WILLIAM EDMUND, L.R.C.P.Ed., Ashfield, Bridgend, Glamorganshire.

1901 THOMPSON, CHARLES HERBERT, M.D.Dubl., 133, Harley street, W.

1867*†THOMPSON, JOSEPH, L.R.C.P.Lond., Surgeon to the General Hospital and Hospital for Women, Nottingham; 1, Oxford street, Nottingham. *Hon. Loc. Sec. Council*, 1896-8. *Trans.* 1.

1902 THORNE, MARY, M.D., 10, Nottingham place, W.

1873* TICEHURST, CHARLES SAGE, M.R.C.P.Edin., Petersfield, Hants.

1895† TINLEY, WILLIAM EDWIN FALKINGRIDGE, M.B., B.S.Durh., Hildegard House, Whitby.

1879† TIVY, WILLIAM JAMES, F.R.C.S. Ed., 8, Lansdown place, Clifton, Bristol.

1884 TRAVERS, WILLIAM, M.D., 2, Phillimore gardens, W.

1893† TRETHOWAN, WILLIAM, M.B., C.M. Aber., care of Dr. MacWilliams, Perth, Western Australia.

1886† TUCKETT, WALTER REGINALD, M.R.C.S., Woodhouse Eaves, near Loughborough.

1898 TURNER, ARTHUR SCOTT, L.R.C.P.Lond., 39, Anerley road, Upper Norwood, S.E.

1865* TURNER, JOHN SIDNEY, M.R.C.S., Stanton House, 81, Anerley road, Upper Norwood, S.E. *Council*, 1893-4.

1903† TURNER, NATHANIEL HENRY, L.R.C.P.Lond., 22, Islington row, Birmingham.

Elected

1891 TURNER, PHILIP DYMOCK, M.D.Lond., Sudbury villa, Ryde, Isle of Wight. *Trans.* 1.

1897 TWYNAM, GEORGE EDWARD, L.R.C.P.Lond., 31, Gledhow gardens, S.W.

1890 TYRRELL, WALTER, L.R.C.P.Lond., 104, Cromwell road, S.W.

1893 UMNEY, WILLIAM FRANCIS, M.D.Lond., Heatherbell, 15, Crystal Palace park road, Sydenham, S.E.

1903 VAUGHAN, ETHEL MAY, M.D., B.S.Lond., 21, Upper Wimpole street, W.

1874* VENN, ALBERT JOHN, M.D., 63, Grosvenor street, W.

1873* VERLEY, REGINALD LOUIS, F.R.C.P. Ed., Constitutional Club, W.C.

1903† VINCENT, GEORGE FOURQUEMIN, F.R.C.S.Edin., Claremont avenue, Woking.

1900* VINCENT, RALPH HENRY, M.D., B.S.Durh., 1, Harley street, W.

1879† WADE, GEORGE HERBERT, M.R.C.S., Ivy Lodge, Chislehurst, Kent. *Council*, 1892-3.

1894† WAGSTAFF, FRANK ALEX., L.R.C.P. Lond., Saffron Walden, Essex.

1898† WALKER, ALFRED, M.D., B.C., M.A.Cantab., 12, Lingfield road, Wimbledon.

1866*†WALKER, THOMAS JAMES, M.D., Surgeon to the General Infirmary, Peterborough; 33, Westgate, Peterborough. *Council*, 1878-80. *Hon. Loc. Sec.*

1889 WALLACE, ABRAHAM, M.D. Edin., 39, Harley street, W.

1901† WALLACE, ARTHUR JOHN, M.D.Edin., Surgeon to the Hospital for Women, Liverpool; 1, Gambier terrace, Liverpool.

1870 WALLACE, FREDERICK, M.R.C.S., L.R.C.P., Foulden Lodge, Upper Clapton, N.E. *Council*, 1880-2.

1883 WALLACE, RICHARD UNTHANK, M.B., Cravenhurst, Craven park, Stamford hill, N.

Elected

1893† WALLS, WILLLAM KAY, M.B. Lond., 14, St. John street, Manchester.

1879*†WALTER, WILLIAM, M.A., M.D., Surgeon to St. Mary's Hospital, Manchester; 20, St. John street, Manchester.

1867*†WALTERS, JAMES HOPKINS, M.R.C.S., Surgeon to the Royal Berkshire Hospital; 15, Friar street, Reading, Berks. *Council*, 1884-6. *Hon. Loc. Sec. Trans.* 1.

1873† WALTERS, JOHN, M.B., Church street, Reigate, Surrey. *Council*, 1896-8. *Trans.* 1.

1898*†WARD, CHARLES, F.R.C.S.I., M.R.C.S.Eng., Pietermaritzburg, Natal, S. Africa.

1898† WATSON, C. R., M.D.Brux., 5, Mount Ephraim road, Tunbridge Wells.

1899† WATSON, HARRY JACKSON, M.D., C.M. Toronto, Ottumwa, Iowa, U.S.A.

1884† WAUGH, ALEXANDER, L.R.C.P. Lond., Midsomer-Norton, Bath.

1894† WEBB, JOHN CURTIS, M.A., M.B., B.C.Cantab., 6, Bina, Gardens, S.W.

1893† WEBSTER, THOMAS JAMES, M.R.C.S., Brynglâs, Merthyr Tydvil.

1901† WEEKES, HENRY HOLMAN, M.D.Brux., L.R.C.P.Lond., 21, Kidbrook park road, Blackheath, S.E.

1897† WEEKS, COURTENAY CHARLES, L.R.C.P.Lond., 9, Lewisham park, Lewisham, S.E.

1886† WEST, CHARLES J., L.R.C.P. Lond., The Grove, Fulbeck, Grantham.

1888* WESTON, JOSEPH THEOPHILUS, M.D.Brux., Civil Surgeon, Hissar, Punjab (care of Messrs. Thacker, Spink, and Co., booksellers and publishers, Government place, Calcutta).

1890* WHEATON, SAMUEL W., M.D.Lond., Physician to the Royal Hospital for Children and Women; 10, Rastell avenue, Streatham hill, S.W.

Elected

1890 WHITE, CHARLES PERCIVAL, M.A., M.B., B.C.Cantab., 22, Cadogan gardens, S.W. *Council*, 1901.

1902† WHITE, CLEMENT, M.B., B.C.Cantab., Star hill, Rochester.

1903† WHITEHOUSE, WILLIAM H., M.D.Durh., Keston House, Aston road, Birmingham.

1902† WHITELOCKE, RICHARD HENRY A., M.B., C.M.Edin., 6, Banbury road, Oxford.

1882 WHOLEY, THOMAS, M.B. Durh., Room 79, Electra House, Moorgate street, E.C.

1901† WIGG, HENRY HIGHAM, M.D.Brux., L.R.C.P., F.R.C.S. Edin., Adelaide.

1902 WILLETT, JOHN ABERNETHY, M.B.Oxon., 36, Wimpole street, W.

1903 WILLEY, FLORENCE ELIZABETH, M.B., B.S.Lond., 8, Avenue road, Highgate.

1901 WILLEY, FREDERICK J. I., M.B., B.S., The Wych, Avenue road, Highgate.

1897 WILLIAMS, JOSEPH WILLIAM, L.R.C.P., 128, Mansfield road, Gospel Oak, N.W.

1890 WILLIAMS, REGINALD MUZIO, M.D.Lond., 35, Kensington park gardens, W.

1899 WILLIAMSON, HERBERT, M.A., M.B., M.R.C.P., Assistant Obstetric Physician, Royal Hospital for Women and Children; 45, Weymouth street, W. *Trans.* 1.

1898† WILSON, CLAUDE, M.D.Edin., Belmont, Church road, Tunbridge Wells.

1892† WILSON, THOMAS, M.D., B.S.Lond., F.R.C.S., Assistant Obstetric Physician at the General Hospital, Birmingham; 87, Cornwall street, Newhall street, Birmingham. *Trans.* 3.

1901† WILSON, THOMAS GEORGE, M.B., Ch.M.Sydney, F.R.C.S. Edin.; 296, Ward street, North Adelaide, South Australia.

Elected

1900† WINGATE, WILLIAM WARBURTON, M.B., B.C.Cantab., 60, St. Andrew's street, Cambridge.

1886† WINTERBOTTOM, ARTHUR THOMAS, L.R.C.P. Ed., Lark hill, Swinton, Manchester.

1877* WINTLE, HENRY, M.B., 33, Strawberry High road, Twickenham.

1893 WISE, ROBERT, M.D.Edin., 5, Weston park, Crouch End, N.

1887† WITHERS, ROBERT, M.R.C.S., Stenteford Lodge, Spencer terrace, Lipson road, Plymouth.

1890 WORNUM, GEORGE PORTER, M.R.C.S., 58, Belsize park, Hampstead, N.W.

1876† WORTS, EDWIN, M.R.C.S., L.R.C.P., 6, Trinity street, Colchester.

1887† WRIGHT, CHARLES JAMES, M.R.C.S., Senior Surgeon to the Hospital for Women and Children, Leeds; Professor of Midwifery to the Yorkshire College; Lynton Villa, Virginia road, Leeds. *Council,* 1903-4.

1888*†WYATT-SMITH, FRANK, M.B., B.C.Cantab., British Hospital, Buenos Ayres.

1871 YARROW, GEORGE EUGENE, M.D., 26, Duncan terrace, Islington, N. *Council,* 1881-3.

1882*†YOUNG, CHARLES GROVE, M.D., Berbice, Sea road, Bexhill-on-Sea.

Number of Fellows 626

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AGNES HANNAM, F.R.S.L.,
Secretary and Librarian.

JANUARY 7TH, 1903.

PETER HORROCKS, M.D., President, in the Chair.

Present—41 Fellows and 18 visitors.

Books were presented by Dr. Strassmann.

John Abernethy Willett, M.B.Oxon., and Janet Campbell, M.B., B.S.Lond., were admitted Fellows of the Society.

Edward Lynn, M.R.C.S., L.S.A. (Charlton, Kent), was declared admitted.

William Edward Moore-Ede, M.B., B.C.Cantab., was proposed for election.

The following candidates were elected Fellows of the Society:—Alexander Duke, F.R.C.P.I., L.R.C.S.I.; Frederick Edge, M.D.Lond., F.R.C.S.Eng.; G. F. Vincent, F.R.C.S.Edin.; Arthur Lionel Hall Smith, L.R.C.P., M.R.C.S.; William Ernest Heilbron, M.B., B.Ch.Cantab.; John Harold Philbrick, M.B., B.Ch.Cantab.; Louisa Brandreth Aldrich-Blake, M.D., M.S.Lond.

PUERPERAL INSANITY.

By Robert Jones, M.D.Lond.
(Introduced by W. S. A. Griffith, M.D.)

(Received December 22nd, 1902.)

(*Abstract.*)

The paper is based upon a personal experience of 259 cases of puerperal insanity, divided into—120 cases during the actual puerperal period, 83 during lactation, and 56 during pregnancy.

Insanity is stated to occur once in every 700 confinements.

Insanity is stated to be of a characteristic form after confinement, amounting to an almost nosological entity; but this is not the case during pregnancy nor during lactation, there being no definite type of insanity occurring in connection with these two stages. The divisions are, however, more convenient than typical.

The following propositions are advanced by the author:

1. The insanity of pregnancy is more common in first confinements among single women, the disappointment, shame, and disgrace of illegitimacy being an important factor in the mental break-down.

2. During pregnancy the mental condition is more often acute melancholia than acute mania, and suicidal symptoms, which occurred in 41 per cent., have to be carefully guarded against.

3. The insanity of pregnancy is divided into that occurring during the early months and that occurring during the later months, and in these the nearer the insanity in point of time to the confinement, the more acute are the mental symptoms. Insanity is not more frequent when the sex of the child is male.

4. The insanity of the puerperium comes on after the first

confinement in 33 per cent. of the cases, and supervenes suddenly rather than gradually.

5. The cases which occur during lactation present characters of marked general physical exhaustion, and mentally are more often of the depressed than of the maniacal form. Lactation insanity becomes chronic oftener than the insanity of the other periods. There is a tendency to low forms of inflammation, thrombosis, gangrene, and phthisis during the insanity of lactation. Both suicidal and infanticidal promptings are more common in lactational than puerperal cases,—that is, in cases where insanity commenced more than six weeks after confinement.

6. The early symptoms of threatening insanity are loss of sleep and headache, and these should be a forewarning of mental break-down. The busy delirium of hallucinatory character, ending in acute restless, purposeless mania with religious and erotic delusions, is characteristic of this variety. The writer suggests a close analogy between the emotions of love and religion, and agrees with Simpson that the organ diseased gives a type to the insanity, and that in women suffering from affections of the generative organs the delusions are more likely to be connected with sexual matters.

7. *Ætiology.*—Heredity is more marked and in the direct maternal line in puerperal and lactational insanity, and is equally paternal and maternal in the insanity of pregnancy. A previous record of hysteria is frequent in puerperal insanity. The question of marriage of hysterical persons is considered.

8. The *pathology* is that of heredity and stress. Is the stress due to a toxin?

9. As regards *prognosis,* cases of insanity during early pregnancy improve towards the end of pregnancy, whereas those of late pregnancy become worse at the puerperium. Puerperal insanity is markedly recoverable. Improvement is rapid, being often complete in three months, but generally takes four to five months.

10. *Treatment.*—All cases presenting headache and sleeplessness must have absolute quiet and rest, and sleep must be procured. Home treatment in all cases if possible. Guard against unusual and sudden impulses of suicide and infanticide. The presence of the husband aggravates the symptoms. There is much necessity for a liberal and stimulating dietary. Change is necessary in puerperal insanity when cases tend to become

stuporose. Menstruation is a sign of mental improvement. Purgatives and iron are well borne.

Criticism.

The following special questions are put forward by way of criticism:

1. Is there such a disease as puerperal insanity—a mental alienation which is either caused by the puerperium or an accompaniment of this physiological crisis?

2. If there is, is the mental condition due to toxæmia, or septicæmia, or both? Or is the delirious mania which occurs in connection with this period due to extraordinarily emotional disturbances? How far does the moral factor enter into the ætiology, and how far does pregnancy in the unmarried state influence the causation of insanity?

3. What is the relation between mania and melancholia?—for instance, is there any relation between the mania of the puerperal period and the melancholia of lactation? If the former is escaped from, may the disease culminate in the latter? Are there two forms of cell reduction, and, again, are they toxic or septicæmic? What is the age of greatest incidence, and in what proportion do cases of insanity occur during gestation, the puerperal period, and lactation in the poor and well-to-do? What is the influence of heredity?

4. What is the essential pathology of this disease?

5. What is the relation between albuminuria and pregnancy? also between albuminuria and the puerperal state?

6. In my cases, so far as the history could be obtained from the relatives or those present, no prodromata of insanity beyond sleeplessness and headache were as a rule noticed, and the onset of insanity was sudden: what is the nature of the onset in the practice of obstetric physicians?

7. As to prevention and treatment, does hysteria in youth manifest itself by insanity in later life at the puerperal or other physiological crisis, and should marriage be discountenanced in these? What views should be generally held as to the marriage of neurotic persons? What are the views as to home and asylum treatment, as to local and general treatment, and (more important and especially) as to the induction of premature labour?

Introduction.

The reproductive process is one of the most fundamental and imperative activities that operate in nature. It includes most of the elementary excitations of which man is capable—the pleasure of possession, admiration, self-esteem, reverence, certain sympathies and wants, and it involves also some of the most powerful as well as the most compound of the feelings and emotions. The reproductive process around which the whole scheme of existence hangs, and upon which it depends, is in certain constitutions—depending upon temperament and heredity—apt to be disturbed; and when disturbance does take place, either during fulfilment or after its immediate completion, it converts the most joyous time of life into one of fearful anxiety, and short of death itself no event is so great a shock to all concerned as is this disturbance; for the parental instinct may be destroyed by disease, and the strongest affection may turn to hatred and become a danger.

Those who have studied the reproductive life of woman admit that gestation is attended with great nervous disturbance in many, and some in all. In normal persons the sympathetic connection between the gravid uterus, the mammæ, and other structures is so disturbed that various forms of neuralgia, severe headaches, dizziness, and insomnia occur; whereas in highly susceptible persons changes of disposition and character become so marked that this irritability, fractiousness, and despondency may amount to actual insanity; and although the reproductive life is less liable to insanity than any other, the dynamical changes in the nervous currents are so great that insanity actually does occur about once in every 700 confinements.

General Statistics.

As to actual insanity during the reproductive life and connected with it, the report of the Lunacy Commissioners

(1902) shows that, of all occurring insanity among women of all ages, the yearly average number of admissions into asylums for the five years 1896—1900 inclusive due to pregnancy, parturition, the puerperal state, and lactation bears the percentage of 6·4 in the private class and 8·1 in the poorer classes to the total yearly average of admissions from all causes. The proportion is somewhat higher among the poor during the period of lactation, as might be expected; but that due to pregnancy and the puerperal period is higher among the well-to-do. At Claybury the statistics correspond very closely with those of the Lunacy Commissioners' report, the number due to the causes under consideration being about 7 per cent. of all occurring insanity, and 10 per cent. of insanity occurring in those admitted during the child-bearing period, calculated between the ages of fifteen and forty-five years.

The cases out of which my numbers are taken represent about 3500 female patients who were received into the Claybury Asylum during eight years after its opening. They exclude all those transferred from other asylums, although in many instances the insanity was due to puerperal states, but I had no direct record of them. Out of the 3500 admissions 259 cases were received suffering from insanity, for which pregnancy, parturition, the puerperal state, or lactation was assigned as a cause—a proportion of 7·4 per cent.; and these are composed as follows:—56 were from pregnancy (49 being delivered in Claybury)—a proportion of 21·62 per cent.; 120 occurred during the puerperal period—a proportion of 46·33 per cent.; and 83 were associated with lactation—a proportion of 32·43 per cent.; yielding a ratio among these cases of four puerperal, three of lactation, and two of pregnancy. During the year 1900 the births of London were given as 132,652, which yields an approximate ratio of one case of puerperal insanity admitted into an asylum for every 1100 births. Other authorities, speaking generally, state that the ratio may vary from 1 in 400 to 1 in 700 births.

Division of Disease.

As to the division of insanity for these periods, the classification which is customary is (1) that which occurs during pregnancy; (2) that from the date of parturition to six weeks after confinement, which in this paper we shall refer to technically as "puerperal" insanity; and (3) insanity occurring during lactation, and dating from six weeks after confinement. This classification must not be taken as suggesting a type of insanity, and it is more convenient than accurate.

The insanity of lactation is calculated to date six weeks after confinement, under the impression that involution of the uterus is then complete, although authorities differ upon this point, for some consider involution at this date to be only half complete, and not accomplished under three months. Moreover the secretion of milk commences within the first few days of confinement in the majority of women, and is not infrequently accompanied with marked constitutional disturbance; but the exhaustion and drain due to nursing is probably not evidenced until the process has gone on for some time, and six weeks is generally agreed upon as the commencement of this period.

As to the types of insanity corresponding to these periods, my experience leads me to conclude that there is no type associated either with pregnancy or lactation; but with parturition and the period immediately succeeding it the insanity presents such a marked delirium, with wildness and delusions of an hallucinatory character, in which religious and erotic features become so prominent, that I recognise for this stage an almost distinct nosological entity—a view, I am bound to confess, which is not supported by some high authorities.

It would appear that in some cases marked mental disturbance takes place during the period of gestation, not amounting to actual insanity, but culminating in acute mania during the later puerperal period; also that

some mental alienation during the puerperal period, not amounting to insanity, may culminate in actual insanity during lactation.

In regard to these I would desire to learn the experience of obstetric physicians.

Civil State; Illegitimacy; Primiparæ.

As to the civil state, only 12 per cent. of the total 259 cases were single. The proportion is much higher, however, when these cases are divided into the different periods already named. In the insanity of pregnancy no less than 25 per cent. were single women, whereas only 8 per cent. of the puerperal cases were single, and only 3 per cent. of the lactation cases, the latter probably owing to the fact that few single women are allowed to nurse their illegitimate offspring.

In Scotland no less than 25 per cent. of all puerperal insanity is stated to occur among single women, but the incidence of illegitimacy varies greatly in different districts. In Middlesex and Essex, which are the lowest (as compared with Cumberland, 70 per 1000 births; and Scotland, which is probably higher still), it is 29 illegitimate births per 1000, a proportion of one illegitimate to 34 legitimate, or about 3 per cent.; and as the ratio in my cases is 12 per cent., this argues a considerably increased liability to insanity among single puerperal women.

As to primiparæ, only among single women does insanity appear to occur with marked disproportion in first pregnancies; 25 per cent. of the cases of insanity of pregnancy occurred during the first pregnancy, and of these 78 per cent. occurred in single women. In puerperal cases the mental break-down followed a first confinement in 33 per cent. of cases. One of my patients had suffered from an attack of insanity with each of her twelve children, and another with each of nine, both becoming chronic and incurably insane at the climacteric.

In lactation cases the insanity did not most commonly follow a first confinement, but appeared to be due to the strain of frequent pregnancies and the exhaustion of long-continued suckling, in some cases prolonged to two years. It followed a third and later confinement rather than a first.

Form of Insanity and Onset.

As to the insanity of pregnancy, the form of mental disorder was mostly of the depressed type, and the acute form of melancholia was more common than the acute form of mania. Some of the single women were weak-minded with weakened emotional inhibition, unable therefore to restrain their passions, and thus were more readily tempted, and they were of the type which is less likely to be helped, and more liable to neglect, disappointment, and shame. Four were epileptics, two general paralytics, and two were congenital imbeciles. In the fifty-six cases, forty-nine of whom were delivered in Claybury Asylum, the onset occurred before the third month in 25 per cent., after the fifth month in 48 per cent., and after the sixth month in 34 per cent. In my experience the insanity of pregnancy occurs mainly towards the end of gestation. I have never heard of a case of insanity about the period of conception, but women have often referred to the mental changes which inform them that conception has taken place. I have not met with a case of temporary insanity during parturition, but the practice of obstetric physicians may supply my inexperience. If this condition occurs it may explain and mitigate tragedies which are occasionally reported. The onset was more often gradual than sudden in pregnancy cases. It has been stated that the insanity of pregnancy was more common when the sex of the child was male, but in forty-four of my cases the sex of the child was ascertained, and the sexes were equally divided.

Of the specially puerperal cases—and it is in this

period that I recognise a special form of insanity—more suffered from mania than melancholia, and from the acute form of mania than that of melancholia. Out of the 120 cases only one was epileptic. The onset was sudden more often than gradual, and the gradual onset characterised the advent of melancholia twice as often as mania. It has been stated that the nearer the insanity is to the confinement in point of time the more acute the symptoms, and this accords with my experience.

Of the lactation cases a greater proportion suffered from the depressed than the exalted form of insanity. In these cases the onset was equally frequent between the second and third months of lactation and the first and second years, but as nursing after the first year is so exceedingly uncommon it must thus be highly prejudicial to the mental and bodily health of the mother, and what affects unfavourably the health of the mother cannot but be injurious to the offspring.

General Symptoms and Ætiology.

The symptoms of puerperal insanity in 40 per cent. of cases occurred within the first two weeks, and of these more than a third occurred during the first week. In some of these cases symptoms of unrest appeared on the second day, and one of my patients was brought under treatment on this day suffering from the most violent delirium, with sensori-motor disturbances. The almost universal early symptom of insanity in puerperal cases is loss of sleep. The progress of a case is described by those who have the care of the patient as at first sleeplessness, then a feverish and anxious restlessness, a busy concern about trivial details, a distrust and suspiciousness, and a readiness to take offence when none was meant, an exacting irritability and a ready reaction to outward stimulus, culminating in wild and delirious excitement and mania. When sleeplessness and headache, followed by

an indefinable feeling of apprehensiveness, occurs in puerperal women with an hereditary nervous instability, any sudden unaccustomed stimulus, of however slight a nature, tends to and may presage a mental break-down. It is for this reason that early attention should be given to sleeplessness and headache.

In puerperal cases the anxious expectancy of the latter months of pregnancy, followed by the subsequent exhaustion of parturition, causes the period immediately after delivery to be one of unusual anxiety even for normal cases. It is a period pre-eminently impressionable to all the systems—the nervous, circulatory, secretory, and excretory, —and it is one in which disordered conduct appears to result, and to be of an intensity out of all proportion to the apparent stimulus.

As to hallucinations of the senses, in those under my care those of hearing were six times as common as any other; but few had hallucinations of smell, touch, or taste. I have noticed in several instances, when hallucinations of smell occur, that delusions with suspicions of poisoning are apt to follow. Delusions as to place and surroundings are not uncommon, as are also those relating to personal identity, the patient mistaking those about her (and whom she may have never seen before) for relations or friends; she also fails to recognise her own identity or that of her infant. This condition has been described as acute hallucinatory insanity, and it resembles that after certain toxins. This confusional state passes into an absolutely uncontrollable and restless violence, accompanied with profound physical exhaustion, in which the patient presents a peculiar glaring, wild look, with a markedly anæmic and generally sallow hue. In those greatly exhausted an overpowering and persistent tendency to yawn has been noticed. The patient not infrequently develops marked antagonism to her husband, erotic delusions appear, with immodest behaviour and improper language, generally with rapid and inconsequent chatter and indecent suggestions. Marked sexual excitement,

with faulty habits, together with religious exaltation, are more often met with in this form of insanity than any other. They appear in a person previously of pure and unblemished character, and this condition shocks and alarms everybody about her. As to the association of prurient language with sexual disturbances and religious exaltation, it must be remembered that love and religion are the two most volcanic emotions to which the human organism is liable, and when the one is disturbed the vibrations naturally and readily extend to the other.

The gibberish nonsense, erotic, immodest conduct, and bad language, the evolutions of shameless indecency, accompanied with noisy delirium and marked religious exaltation, with purposeless restlessness, together with profound bodily exhaustion, characterise and sum up, if I may say so, the insanity of the puerperal period, and in this I am disposed to recognise a distinct type of insanity.

In the insanity of pregnancy and lactation my experience leads me to conclude that there are no general symptoms characteristic of these stages.

Suicidal attempts.—Suicidal promptings were most common in the lactation cases, and occurred in nearly half the number. In the insanity of pregnancy suicidal intent was noted in 41 per cent. of cases. In the post-puerperal cases it was only marked in 21 per cent.

Infanticide.—The tendency to injure the child was relatively more common in the lactation than in the puerperal cases, but several patients were described as careless and neglectful, and as having lost the natural affection for their offspring.

Hysteria.—It is interesting to note in many cases the previous record of hysteria, although the percentage of these is not high. The question may be asked whether hysteria in early life increases the possibility of a mental break-down in the puerperium; for if so, the marriage of hysterical persons should be discouraged. It must be remembered, however, that to many girls marriage fulfils a natural expectation, and may lessen the possi-

bility of a mental break-down at the climacteric. To condemn these women, therefore, to a single life may be unnecessarily harsh, and fail in its purpose should they act upon the advice proffered to them in this direction, which is more than doubtful.

Temperament.—Most of the puerperal cases were described as cheerful, fewer among the lactation cases, and least among the pregnancy cases; among the last were most of those described as reserved.

Introspection and brooding are not indications of a well-balanced mind. That mind is healthiest which receives a constant stream of ingoing sensorial impressions, a deprivation of which means decay and disease.

Hair, eyes, and pupils.—Brown hair and grey eyes mostly predominated, but these are the most common colouring among women in the United Kingdom. The pupils answered to the Argyll-Robertson reaction in the five cases of general paralysis. In only 7 per cent. were the pupils noted to be markedly dilated, and equally in cases of mania and melancholia. It is stated to be a symptom of marked exhaustion, but it is by no means a constant one.

Ages.—The age of the greatest incidence to insanity was between 25 and 29 years inclusive, both for the insanity of pregnancy and that of the puerperal period; whereas the age of greatest incidence in lactation cases was between 30 and 34 years—a fact which supports the view that this latter form is closely related to exhaustion, and occurs most commonly immediately after the best period of life, namely, that under 30 years. Although some cases were under 20 years of age, a certain number of patients suffering from insanity after the puerperium and during lactation occurred between the ages of 35 and 45 years—a fact which agrees with general experience and expectation, that when pregnancy and parturition occur beyond the age at which restoration and recuperation naturally and readily occur, the great outlay and exhaustion consequent thereon are more likely to yield to

the breaking strain; but it is difficult to state upon which age-extreme of the reproductive life this is greater, and it is open to further inquiry.

Heredity.—Of the 259 cases nearly 50 per cent. had some hereditary predisposition, either physical or mental, and this includes both direct and collateral insanity, epilepsy, suicide, intemperance, phthisis, etc.—a higher proportion than is generally ascertained. In the puerperal cases heredity was more often direct-maternal than paternal; in the lactation cases it was direct-maternal twice as often as paternal. In the pregnancy cases there was no difference.

Heredity was most marked among the pregnancy and puerperal cases; *i. e.* where stress is most felt, there the mental break-down from a weakened inheritance is most likely to occur. It is upon the baneful influence of an evil heredity that attention should be concentrated, for it is impossible to qualify that great biological law according to which all beings endowed with life tend to repeat the elements and functions of their inherited organism in their descendants—a law which governs the subordinate no less than the dominant characteristics, and which involves internal and external structures with their physiological and psychological consequences.

Prognosis and Recovery.

This form of insanity is considered by all authorities to be the most prone to recovery.

As to the infants, many of them failed to survive their births for long, and I consider that insanity is very unfavourable to the life of the offspring.

As to prognosis in the different types, insanity occurring in early pregnancy is favourable; that in later gestation is apt to continue in an exaggerated degree until after confinement and during the puerperal period, and may afterwards become chronic. Three of my 56 cases were discharged recovered before confinement,

although it is stated that the insanity of pregnancy rarely passes off before delivery. I am inclined to think that the strain during the last months of pregnancy and immediately before parturition is more likely to unbalance a mentally unstable woman than that attending the early stages of pregnancy.

Most of the puerperal cases get rapidly well, but I have known several cases of acute mania on admission passing on to permanent dementia. When the onset is gradual, and the form of insanity is melancholia, the termination is often dementia and chronic. Although contrary to the teaching of both Savage and Clouston, my experience of this form of insanity can recall numerous and frequent relapses, which I think more common than is generally believed. Insanity during lactation has the tendency (as in the puerperal form) to get rapidly well, but warning must be sounded against the risk of low forms of inflammatory diseases, indicating a general want of recuperative power and a low state of nutritive tone, which not infrequently make themselves manifest by a tendency to gangrene or phthisis, and indicating also the necessity for a stimulating and vigorous form of treatment. Of the 259 cases 102 had a sudden onset, and of these 68 recovered—a proportion of 66 per cent.; whereas in 155 cases with a gradual onset, 81 recovered—a proportion of 52 per cent. Of those who are chronic or who have died, the majority had a gradual onset. The psychopathic taint is the chief element in the pathology and prognosis of insanity, and the whole question is the inherited durability of the neuron. Albuminuria in puerperal insanity is not common; when it occurs the prognosis is grave. In one of my cases the convulsions only ceased after the administration of chloroform. A return of menstruation is a satisfactory symptom.

Savage states that from 75 to 80 per cent. of puerperal and 80 per cent. of lactational cases recover, adding that those suffering from puerperal insanity hardly ever recover completely under five months. Bevan Lewis quotes

the recovery rate at 80 per cent. My own statistics bear a like interpretation, as in the 120 puerperal cases 88 recovered, a proportion of 73 per cent., and 13 died, 10 per cent. Of the 83 lactation cases 49 recovered, a proportion of 60 per cent., and 14 died, a proportion of 16 per cent.; whilst of the pregnancy cases, 56 in number, 27 recovered, a proportion of 48 per cent., and a death-rate of 21 per cent., yielding a grand recovery rate of 63 per cent., and a death proportion of over 15 per cent. in the 259 total cases. Of the recoveries, 43 per cent. occurred among the puerperal cases before the expiration of four months, and 31 per cent. before the expiration of three months.

The death-rate is highest among the insanities of pregnancy, and lowest among the puerperal cases. Most of the deaths among the lactation cases occurred after over two years' residence. The majority of deaths among the pregnancy cases occurred also in those with over two years' residence, and they had become chronic. The majority (70 per cent.) of deaths among the puerperal cases occurred when these had been less than six months under treatment.

Pathology.

It is desirable, if possible, to distinguish the form of brain affection which is due to pregnancy and the puerperal period, including lactation, from that which occurs independently of the bodily condition under consideration.

The parturient state implies marked psychic and bodily transformations, and these are caused by the new uterine eccentric reflex and the active state of the reproductive organs. These changes during a first pregnancy—involving the arousal of maternal instincts for the first time—cause an anatomical and physiological strain upon the organism which opens up channels in the nervous system hitherto undeveloped, and these channels are brought into fresh activity with each repeated gestation. A reflex

process goes on which, although not directly dependent upon the higher nervous system, nevertheless profoundly reacts upon it; many phases of mental condition are experienced, and any unfavourable nervous accompaniment or development tends to be repeated at each successive similar crisis. It is known that when a gravid uterus is cut off from the cerebral centres by a complete accidental section of the cord, natural labour pains come on at full term if the pregnancy proceeds (Routh), also the mammary glands enlarge and proceed to secretion, even when all the nerves entering the mamma have been divided. Absorption through the placental circulation (and probably also from the liquor amnii) of material necessary for the building up of embryonic and fœtal structures and the discharge of waste products from the fœtus suggest considerable alterations in the mother's blood. Whether this means a change in the phosphorus-containing elements of the blood is uncertain (we know that the most vital and most highly vitalising cells and tissues of the body contain this element in some proportion), but certain blood changes that occur during pregnancy possibly involve a slightly toxæmic condition of the maternal blood which lasts for a considerable period. Some have compared this to a form of anæmia, there being a material diminution both in the number of the red blood-corpuscles and also in some forms of albumen, whereas an increase is said to take place in fibrin and extractives—conditions which appear to favour the frequency of thrombotic affections. Some chemists have described a condition of peptonuria in association with pregnancy. From the sallowness, the deposit of pigment, and, as some chemists have stated, an increase in the co-efficiency of urotoxicity, it is possible that profound changes do occur in the maternal blood during gestation, which may in part, at any rate, account for the mental transformation incident to pregnancy. During the period of full development of the reproductive process—a period which involves more or less retirement—many states of mental action and

reaction occur. The vague fears and dread, on the one hand, and the eager expectations and exalted feelings on the other, may in the psychopath amount to actual insanity; and, as Sir James Simpson stated, "the organ diseased gives a type to the insanity, so that with women suffering from affections of the generative organs delusions would be more likely to be connected with sexual matters," as already referred to.

The form of insanity which characterised the fifty-six cases referred to in my statistics was, in the main, acute depression or melancholia, which was more marked than its antithesis, the acuteness of mania, possibly owing to the impending fear of danger and the apprehensions which a first pregnancy excited, and, as might be expected, this was especially the case in the first pregnancies of single women.

Bevan Lewis states that, fundamentally distinct as the two mental states of melancholia and mania would appear to be, the process of reduction is the same in both. What the nature of the process (which causes so great a transformation in the mind of the parturient woman) may be is not definitely ascertained, and, from the twelve deaths which took place in those suffering from the insanity of pregnancy, there was, apart from general paralysis in one case, nothing pointing to any definite cause of mental disorder peculiar to this period. There is in all cases of insanity a breaking strain at which the crisis occurs, and, such is the tendency with some authorities to look upon mental disease as essentially bodily, that a mere reference to mental strain may here not be out of place. We know that in ordinary life the perusal of a letter or the sudden communication of bad news may strike the stoutest to the ground; indeed, the physical accompaniments of fear are too well known to require detailing. Fear may paralyse, and hope can instantaneously give soundness and vigour to the frame, as much as despair can effect the reverse. The shame and worry of an illegitimate pregnancy must exercise a con-

siderable influence as a moral factor in the production of insanity, and my statistics support this view.

The relation of general paralysis to puerperal insanity I consider to be accidental, for the disease had been in existence for a considerable time previous to pregnancy; in one case, which lasted five years, general paralysis was known to have lasted over two and a half years before admission. During pregnancy one such patient was liable to general or hemiplegic seizures and alternating periods of albuminuria, and consequent regression of mental and physical symptoms, yet no premature confinement took place in these cases of general paralysis. When parturition is over, and the acute additional stress following this stage has passed, the general paralysis appears to make a slower progress.

Immediately after confinement the morbid and effete material which is taken into the maternal circulation during early uterine involution must tend to produce in the predisposed a profound irritation of the nervous system, and especially so should secretion and excretion be modified by interference, chemical or bacterial, with the normal functions of the venous, lymphatic, and other excretory organs. It is in the early stage of the puerperal period in neurotic women with an inherited tendency that the most violent delirium occurs.

This period in the lying-in woman is, of all others, the stage of septic infection, when saprophytic bacilli gain entrance into the blood, and either themselves multiply in the blood, giving rise to a general septicæmia and pyæmia, or produce general toxæmia through the formation of poisonous chemical substances. Whether saprophytic bacilli have pathogenic potency possibly depends upon the vital resistance of the blood and tissues; there are cases in which the resistance is so slight, owing to an unstable nervous system, that toxic products, and these alone, may cause maniacal delirium, and the symptoms appear to favour this view. The delirium comes and goes. The stimulus of a voluntary effort or other

afferent stimulus is sufficient to regulate conduct for a short time, but the mental confusion and delirium reappear.

The foul, dry, and coated tongue, the sordes on lips and teeth, the loaded bowels, scanty concentrated urine, and the dry skin point to an accumulation of nitrogenous and other toxic products in the blood. The chemistry of vital activity is not at present, however, sufficiently complete to enable us to state with definite accuracy the form and nature of the various basic substances containing nitrogen, which in chemical constitution resemble the vegetable alkaloids, and which act as toxins.

The identification and isolation of some of these ptomaines from putrefying material and from the cultures of bacteria concerned in putrefaction have been accomplished by some chemists, and some of these are demonstrated to be toxic in very minute doses, but others are non-toxic.

Arnold investigated the bacteriological condition of the lochia in puerperal women by inserting a sterilised tube into the uterus, withdrawing some of the contents and making cultures, with the result that whilst in some streptococci, staphylococci, anaërobic bacteria, and various bacilli have been identified and pure cultures obtained, in others no bacteria were found. The indications from these researches would point to treatment by appropriate antitoxins. Dr. Mott has examined the blood of some cases of puerperal mania and made cultures, but with negative results as to micro-organisms. Other observers have found streptococci, staphylococci, and the *Bacillus coli communis*. It is uncertain and improbable that all forms of puerperal insanity are due to the presence of bacterial poison, although unquestionably some are of septic origin, the sudden and violent symptoms favouring the theory of septic absorption; but an elevation of temperature usually accompanies septic infection, and some of the cases, although received from the second day after confinement, had no fever, the temperature remaining

normal throughout an acute delirium lasting for several days. The temperature in most of the puerperal and lactation cases was taken on admission and often afterwards, and it was exceptional for it to be raised above one to three degrees beyond normal. If these cases are toxic, how is it that insanity occurs most often after the first confinement? There is no doubt, however, judging from the analogy of poisons and of alcohol, that some of these cases are toxic, and that morbid material—animal, vegetable, or mineral—circulating in the blood is able to cause disordered energy in the cerebral cortex, with consequent mental aberration. If the uterine surface be not at fault, other toxic influences are found in the uræmia or other hæmic states.

With regard to lactation insanity, the great drain upon the mother, who, from inability to act otherwise in the lower classes, is often obliged to nurse her young for long periods, and who also, from the fear of another pregnancy, continues this for many months beyond what is necessary (in some of my cases even for two years), entails acute bodily exhaustion, and to this loss of albumen her mental break-down must in great part be attributed. Statistics of insanity in the rich and poor during this period support this view, as also does the prevalence of pneumonia with gangrene of the lungs and phthisis, the latter causing about 24 per cent. of deaths in this class. Impoverished blood-supply, uterine subinvolution, and a general cachectic condition accompanied this form of insanity in many of my cases. As to the association of this class with general paralysis, only one case occurred among eighty-three cases. This patient had seizures five months after confinement, and she was, in addition, the mother of five children. It is not improbable that the exhaustion of lactation may have precipitated what might otherwise have been further delayed.

Treatment.

No greater truism has been uttered than when Gooch stated that no medicinal agents can relieve a disordered mind except indirectly through the disorder of the body with which it is connected, and this disorder of the body must therefore be ascertained and discriminated.

The treatment of disorders during this physiological period must depend upon whether the stage be that (1) of pregnancy, or (2) of childbirth, or (3) after confinement. And first as to pregnancy. Out of 56 cases, whose insanity occurred during pregnancy, 49 were delivered in the asylum, 47 at full term. It has been recommended by some authorities that if the onset of insanity be early in pregnancy, abortion should be procured. Unless this treatment be adopted for convulsions or uncontrollable vomiting I fear that it has but little to recommend it. The symptoms in many suffering from this form of insanity pass off either towards the end of pregnancy or soon after confinement, whereas the chances are remote of operating successfully upon a patient who is not quite capable of assisting her own aseptic treatment, but who, on the contrary, may add further risks to it owing to her own mental condition. These disabilities appear to me to be strong contra-indications to premature delivery as an attempt to cure the insanity. In fact, when labour took place the patients were often described as stubborn and resistive, and not at all inclined to assist themselves. On the other hand there is an end to anxiety as to the future of the child if it survived, but this does not concern us. The great outbursts of excitement which are not infrequent symptoms of this variety, the marked fits of depression and fear culminating in suicidal attempts, require the most constant vigilance on the part of those around her, and, in private practice, the great question of home or special hospital treatment becomes of paramount important. The dislike and mistrust shown by the wife towards her husband, coupled with the general tolerance of trifling

mental deviations and discontent at these times, and the feeling of repugnance against putting pregnant women away make it difficult if not impossible for the husband to do so, and she is, in consequence, generally nursed by her friends. On the other hand, the indifference to her children and their possible danger at her hands, and the heedless regard of the home ties, may make it necessary to remove her to the asylum. The impulses to suicide and homicide are not infrequently aggravated by the presence of friends, whereas the regular routine of asylum life favours regular processes of thought and reflective action which are the first indications of recovery. Asylum treatment also often renders unnecessary the excessive and damaging use of narcotics, calmatives, and restraints which must be used to prevent the noise and destructiveness of patients in their own homes, and it rids the patient for a time of the family relations, who almost invariably have a prejudicial effect upon her. The question of treatment most often resolves itself into one of means. Personally I would hesitate to send the well-to-do pregnant woman from a home where she can obtain all the advantages of asylum care, which is impossible for the poor. The general treatment is that of the parturient female—a light dietary, general exercise, bright surroundings, attention to the bowels by saline aperients, and sleep by mild hypnotics, the best of which are chloral and bromide in combination. Complications which may arise, such as eclampsia, placenta prævia, etc., must be dealt with after the methods and upon the principles of obstetric practice.

Insanity occurring after the puerperium needs more special treatment both general and local. This is the form most prone to recovery, and well-to-do women, if suffering from the first attack, should not be sent away from home within the first six weeks of the onset of symptoms. At the same time this is one of the most difficult forms to deal with. It involves great expense, and owing to the emotional disturbance and the tendency to infanti-

cide and suicide is a very serious responsibility. As in the insanity of pregnancy, the presence of the husband is not only very undesirable, but is often the exciting cause of erotic delusions and impulses. It will be an intense relief to the family to avoid the stigma of an asylum when this is possible, and the gratitude of patients upon recovery from this form of insanity for everything that has been done for them—and they require vigorous treatment—is in marked contrast to the recovery from any other form. Moreover to the mother herself it will be an equally intense relief, as Savage states, to think she has only been suffering from "fever," and not brain disease, and it will help her to go through subsequent confinements without a mental break-down if she can be treated at home and not in an asylum. For the mania of this disease the "wet pack" has been used successfully, and is recommended by several authorities, but I have had no experience of its use. I have used continuous immersions with water at 100°, but had to give it up owing to the struggling. I have had satisfactory experience of the electric bath treatment when cases have appeared to become chronic and stuporose, or indifferent to their surroundings. Although the insanity of childbirth is impulsive, wild, violent, and noisy, it is a busy delirium not of a sthenic character, and treatment of too antiphlogistic a kind is undesirable. Most of my patients had undergone the most severe bodily strain, for, in addition to the puerperium, they also had the care, responsibility, and management of a home under peculiar difficulties. I know of no form of insanity which so well repays generous treatment, and the free administration of liquid, easily assimilable nourishment is a necessity. Indeed, the essence of treatment may be summed up in "compulsory super-alimentation." The great danger in these cases is starvation, and the crux of treatment is decisive feeding. Refusal of food is the most serious symptom in all cases of puerperal insanity, and must be combated at all cost, as when bodily improvement occurs in puerperal insanity it is very frequently the

forerunner of mental recovery. Food should be given during every quiet interval and at each opportunity, as the exhaustion from this form of acute delirious mania is intense. It is for these cases that alcoholic stimulants appear to me to be absolutely necessary, although I have seen cases of lactation insanity actually occur through their misuse. Cases are reported in which, within a week or so of admission into the asylum, puerperal women have developed gangrene of the extremities necessitating amputation; and although it is open to critical suggestion that this is a proof of septic or bactericidal orgin, I have not met with this gangrene of the limbs in any of the 259 cases under review, although I have met with cases in which, when pneumonia has occurred, the hepatised lung has failed to undergo resolution, and rapid phthisis has resulted. I often (probably in more than 25 per cent.) use the nasal feeding-tube for puerperal and lactation cases; eggs, beef-tea, milk, and malt liquor, malt extract, and cod-liver oil, are pressed upon the patient, who during puerperal mania can bear free doses of calomel, podophyllin, jalap, or croton oil, not only once but frequently repeated. Sleep must be obtained, and for this opium and morphine are both unsuitable: the former is contra-indicated owing to its effect upon the secretions, and also owing to its stimulating effect on the nervous and circulatory organs; the latter is uncertain, and when sleep is obtained by its use it is apt to proceed too far. Sulphonal is useful when there is much motor excitement. Paraldehyde is satisfactory, but more so are chloral and bromide in combination. It is important to relieve headaches which often accompany sleeplessness, and for this I have successfully used antipyrin and potassium bromide. It is especially during the early puerperal period that care should be rigidly exercised to avoid sudden excitement, to procure sleep, and to sustain the organism in a healthy nutritive state during the period of restoration. Iron, strychnine, and digitalis I have used during the later stages of involution, and the

great change from a cachectic waxy pallor to natural colour is rapidly apparent when iron is tolerated. A return of the menses may be looked upon as a forerunner of permanent mental improvement, and means to encourage this should not be omitted.

Before recovery is complete I have, as already stated, frequently noticed relapses and a return of mental confusion after apparent convalescence. This pathological periodicity appears to be the equivalent of the physiological periodicity occurring in normal sexual and reproductive life.

At times, after prolonged mania, a dull listless condition of semi-stupor is developed which requires a special effort to overcome. I believe it is at this stage that a change from the asylum to home surroundings may prove beneficial; or, if the patient is treated at home, a change from home is attended with marked improvement. If this be neglected an incurable dementia may set in and become fixed. One cannot insist too strongly upon a return to home life in these asylum or hospital cases. As to local treatment, vaginal douches of boracic lotion, Condy's fluid solution, and carbolic acid have been used in many of my cases, and the last appears to soothe also, as some patients have asked to continue the carbolic douches.

In cases where an offensive discharge occurs, and the temperature points to the retention of membrane or clot, it is necessary to dilate the cervix under an anæsthetic, and "curette" the endometrium. In one case this was successfully done. In another, confined before admission, sudden hæmorrhage occurred about the seventh week after childbirth, and recurred twice. The vagina was packed with ice, and normal saline solution injected into the rectum.

In two cases I have used the antistreptococcus serum, but beyond the slight reaction evidenced by elevation of temperature, which may have been due to the fear on her part that some harm was being done to her, no good resulted. Thyroid extract has been tried in several cases.

Marked physical reaction resulted, but no mental benefit accrued, and the cases became chronic.

The breasts need special attention. Glycerine extract of belladonna has been used, as also strapping, and in some cases abscesses formed, which had to be dealt with.

I have already referred to the prevention of this form of insanity by discountenancing the marriage of hysterical and neurotic persons, and upon this I should like further information from the practice and experience of others.

I conclude by expressing my firm belief that insanity is, and ever will be, the product of two factors—stress and heredity.

We are living in an age in which the requirements of modern life involve an increasingly heavy and severe strain. The greater the inherited vital resistance the greater will be the strain required to overcome it. Our duty is to raise this resistance by promoting the development of a healthier and more vigorous race, and thus render growth more perfect and death more remote.

Sir John Williams dwelt upon the peculiar condition of the nervous system in pregnancy, parturition, and the puerperal state, and reviewed briefly the pathology of puerperal insanity. He strongly deprecated any curetting of the uterus shortly after labour or abortion, considering it a very dangerous practice.

Dr. Blandford said that the statistics of recoveries given by some physicians were even more favourable than those of Dr. Jones. Dr. Clouston tells us that 87·5 per cent. of his cases had recovered by the ninth month. Mr. Bevan Lewis gives a recovery rate of 80 per cent. The mortality in the cases of each was about the same, 8·4 per cent. These were all cases sufficiently severe to be sent to an asylum. Many slighter cases not sent away would swell the recoveries, though it is to be feared that the mortality rate would also be increased by the deaths of patients who ought to have been sent to an asylum, but were not because of the prejudice of friends. Beyond question the earliest symptom of approaching mental trouble is loss of sleep, and this should be most closely watched, and every precaution taken that the patient shall not be disturbed by noises or talking in the room, by the child being brought to be nursed, or by the visits of friends. With regard to Dr. Jones's question, is the mental disturbance due to toxæmia or septicæmia, or both?—it must be remembered that toxæmia and septicæmia are different things.

Septicæmia, unfortunately, we know a good deal about, and the result is puerperal fever, not puerperal insanity. About toxæmia we have heard a good deal, and some have gone so far as to say that all insanity is toxic, and depends upon toxins. We have a great deal more to learn about toxins, which are now much in fashion. Why do certain people generate toxins while others do not? Thousands and thousands of women bear children and never become insane. Among native races child-bearing is hardly looked upon as an ailment. Why do certain women generate the peculiar toxin which causes insanity? Toxins do not explain the pathology of insanity. They do not agree with the on-coming, the symptoms, or the passing away of the disease.

Dr. Herman thought the paper and the discussion upon it would do great good if it impressed upon the profession that the main duty of the general practitioner and the obstetric physician in regard to puerperal insanity was to prevent it. Treatment was mainly in the hands of the alienist. To prevent puerperal insanity, the great things were to see that the patient got food and sleep. If sleep was absent, he thought that the best hypnotic was alcohol. There were objections to alcohol, of which in the present day no one was in danger of losing sight. Every hypnotic, if taken too much, did harm; but the harm done by alcohol if taken too freely was far less and far slower in coming than that done by chloral, bromide, morphia, sulphonal, or any other hypnotic if taken habitually for long periods.

With regard to the questions in paragraph 7, he would ask what was hysteria? The most common and most definite hysterical phenomenon was the well-known hysterical seizure; but the author surely would not propose that the marriage of every woman who had suffered from hysterical seizures should be discountenanced. With regard to the less definite and less common nervous symptoms commonly spoken of as hysterical, he thought the knowledge we had of these nervous states, and our power of accurately forecasting the future of such patients, the effect of marriage upon them, and the kind of offspring they were likely to have if fertile, were far too imperfect to justify medical men in taking upon themselves the responsibility of discountenancing a proposed marriage. To forbid marriage was often to spoil the happiness of a woman's life. The utmost that a medical man should do was to express to those concerned whatever fears he might have as to the result of marriage, explaining also how much these fears were merely conjecture.

Dr. Charles Mercier, after touching upon several of the points suggested for criticism by Dr. Jones, took exception to the statement that headache was a common prodroma of puerperal insanity. The only reliable indications were, he thought, sleeplessness and loss of appetite. He did not think that single women who became mothers suffered much emotional stress as a

rule. Many of them were already half-witted, and the insanity of the puerperium was only an exaggeration of their usual state. The rest were, for the most part, upon a low moral plane. When these incurred the risk of maternity they counted the cost and were ready to face the music. He protested strongly against the suggestion that puerperal mania could be treated satisfactorily at home. Institution treatment was always best, for reasons which he enumerated. Menstruation was often a mark of recovery, it was true; and when the mental state cleared up on the appearance of the menses the combination was extremely favourable, but the establishment of menstruation without mental improvement indicated a very gloomy future.

Dr. Champneys said that obstetricians had very limited opportunities of observing cases of insanity, even that connected with parturition, compared with alienists. In private an obstetric physician might or might not see his patient during her pregnancy; he saw her during her labour, and then, if all went well, for a month. In a lying-in hospital he did not see his patient during her pregnancy; he saw her during her labour, and, if all went well, for a fortnight only. On the other hand, the net of the alienist swept insane patients into it at all other times. He had not found the over-active nurse described by Dr. Blandford. Doubtless a nurse who got up six times in the night to poke the fire and wake the patient would be objectionable; but, in his experience, nurses were apt to get up rather too little than too much. He fully endorsed all that had been said about sleeplessness as the striking symptom of threatening insanity, about the necessity for procuring sleep, and about the pre-eminent value of alcohol as a sedative in such cases. He was surprised to hear Dr. Mercier bring all single parturient women into one category, and to say that they were all of low moral calibre, and did not much care about their illegitimate pregnancy and motherhood. He had not had a very wide experience of such cases in private, but he had had a certain experience, and his opinion was that such women differed widely. He had seen women, both married and unmarried, apparently without any moral sense, even among the so-called upper classes, and had been disgusted to find that their mental attitude had been one of a sort of inward chuckling over the escape of discovery. On the other hand, he had seen such women in the worst depths of mental distress, penitence, and remorse. He had always been greatly interested in the relation between single births and insanity, and it had always seemed to him that if mental distress were a factor in producing insanity, its frequency in such cases ought to vary directly as the moral standard. He would be glad to know if this had anywhere been worked out. It is a well-known fact that the moral standard with regard to such matters varies greatly in different countries. If the above conclusion were true, the proportion of cases of in-

sanity in single mothers ought to be lowest in immoral and highest in moral countries. As regards toxæmia and its relation to pregnancy, he did not think that the explanation given in the paper would altogether suffice. Effete products were doubtless prevalent after confinement. On the other hand, the sense of physical and mental comfort and relief ordinarily experienced after delivery was proverbial. He did not think that this would be the case if ordinary toxins were the usual cause of insanity after labour. He had been asked whether any one present had seen convulsions produced in a baby by mental shock to the mother. He had not; but he believed he had seen an unborn child killed in this way. The case was one of an advanced extra-uterine pregnancy many years ago, in which he had constantly watched the fœtal heart. The mother received a sudden shock from a shriek in the next ward, felt the child move violently, and from that time the fœtal heart ceased and the child had died. He believed still that there was a distinction between ordinary and septic cases of insanity, and he knew the terrible acute delirious insanity with albuminuria which killed the patient though beginning insidiously; but he would be glad to be able to distinguish ordinary from septic insanity.

Dr. Lloyd Andriezen stated that the division into insanity of pregnancy, of the puerperium, and of lactation was a conventional, not a nosological classification. He recognised in asylum patients a form of insanity peculiar to and common in the puerperal state. The insanity of the later months of pregnancy was often of a depressive form, and was fraught with danger of suicide; but other psychoses might also manifest themselves at this period. He concluded from a careful study of statistics that illegitimate pregnancy was twice as frequently followed by mental disorder as legitimate pregnancy. He regarded puerperal insanity as comprising three main types of mental disorder, viz., first, a collapse delirium following upon parturitions attended with marked exhaustion and hæmorrhage; secondly, an acute confusional insanity with hallucinatory delirium (frequently misnamed "mania"); and thirdly, mania or melancholia proper, or alternating manio-melancholic insanity. This third category of cerebral affections was rare in the puerperium, while the second variety was *per contra* frequent. The patients who developed the characteristic acute confusional insanity with hallucinatory delirium above noted were generally psychopathic subjects, whereas normal women going through the stresses of the puerperium suffered only a slight ephemeral cerebral disturbance. Fifty per cent. of cases of puerperal insanity in public asylums (whether primi- or multiparæ) gave histories and indications of a psychopathic heredity. He believed that septic infection from the bruised and wounded tissues of the parturient canal played an important *rôle* in the causation of puerperal delirium. Where

the septic or toxæmic factor was intense a corresponding disturbance of pulse, respiration, temperature, and secretion was noted. Clinically and psychologically it was possible, as a rule, to distinguish cases of collapse delirium from those of acute confusional puerperal insanity of combined psychopathic and septic origin, and occurring in the first fortnight after childbirth. The latter manifested symptoms of insomnia, loss of interest in surroundings, and loss of natural affection for the child—indications of clouded consciousness and cerebral apathy. To talkativeness succeeded a stage of incoherent or rather confused speech, and excitement from hallucinations of sight and hearing followed. These patients were liable to dangerous suicidal, destructive, and infanticidal impulses; they were not cases of "mania" properly so called. The insanity of lactation was typically an exhaustion psychosis, and in a few this was complicated by toxæmia from secondary pelvic, or mammary trouble.

Dr. F. W. Mott said that the culture experiments referred to by Dr. Jones, as having been performed by him, were too few to be of any real value; and although negative results were obtained in two cases of puerperal insanity with fever, that did not prove that the fever, nor possibly the insanity, was not due to septic absorption. Dr. Mott had noticed that among the large number of cases recorded by Dr. Jones there was not a single case of gangrene; perhaps, therefore, he might be allowed to relate an instance of symmetrical gangrene of the feet which he had seen in a woman certified as suffering with puerperal insanity, who was admitted into one of the London county asylums. This patient, not long after admission, developed signs of gangrene of the feet, and for this reason his attention was called to the case. The history showed that the child had been born dead, and it was found that she was suffering from septic endometritis. Her mental condition improved when this was treated. The speaker asked Dr. Jones what he considered were the most important symptoms distinguishing puerperal insanity of septic origin from the delirium of fever occasioned by the same causes. Some authorities describe a transitory puerperal psychosis, some of which cases accompanied by fever would be difficult to distinguish from cases of puerperal fever with delirium. Dr. Mott considered that the majority of cases of puerperal insanity were not of septic origin, but due to inherited psychopathic or neuropathic conditions, the determining factors being stress and a subminimal deficiency in the blood. Both in lactation and pregnancy the maternal blood has to supply a large amount of complex phosphoretted bodies of the lecithin group for the building up of the nervous tissues of the infant, of which the relative weight to the body tissues is very large, as shown by the ratio of the brain to the body-weight in the infant. This, in a

psychopathic individual, may lead to nutritional deficiency in the maternal brain tissues. Dr. Mott said he would be glad to hear of the method by which the last speaker, Dr. Andriezen, had been able to determine microscopic signs pathognomonic of puerperal insanity.

Dr. Percy Smith said that his statistics in cases of puerperal insanity differed somewhat from Dr. Jones's. From the consideration of 100 consecutive cases at Bethlem Hospital he had found that in 41 per cent. insanity had followed a first confinement, as against 33 per cent. in Dr. Jones's cases. Again, he had found 57 per cent. of cases begin in the first fortnight after delivery, against Dr. Jones's 43 per cent. The recovery rate at Bethlem Hospital had been about 80 per cent., as against 66, and only two deaths had occurred out of the 100. No doubt the fact that the patients admitted to Claybury were of the pauper class, and their general nutrition before the illness in a less satisfactory state than in those admitted to Bethlem Hospital, accounted for the difference in recovery rate. With regard to the early symptoms, he thought that next to sleeplessness, restlessness and early confusion of thought were more important than headache. He agreed with Dr. Mercier that there was no definite form of mental disorder which could be looked upon as absolutely characteristic of puerperal insanity, and pointed out that cases might be either of the delirious, confusional, maniacal, melancholic, stuporous, or delusional types; and he did not think it was possible unerringly to pick out the puerperal cases in the wards of an asylum without knowing the history. Mania with religious or erotic delusions was often seen in young women the cause of whose insanity was not puerperal. He had very little personal knowledge of illegitimacy as a cause, but called attention to Clouston's statement that 75 per cent. of the puerperal cases admitted to Morningside Asylum followed illegitimate births. Another point in the ætiology was that 26 per cent. of the cases admitted to Bethlem Hospital had had a previous attack of insanity, either one before marriage or one after marriage, which was not puerperal in origin, or a previous puerperal attack. He referred to Dr. Herman's remarks on hysteria, and said that alienists constantly found a history of previous "hysteria" in patients admitted to asylums which, when carefully inquired into, was found in many cases to have been a previous attack of definite mental disorder euphemistically called "hysteria." He was sure that such patients ought not to marry. With regard to septic causes, in 23 per cent. of the cases admitted to Bethlem Hospital there had been a history of the use of forceps, or of perinæal laceration, or severe post-partum hæmorrhage, or of pelvic inflammation, or abscess, or some other indication such as high temperature, abdominal tenderness, offensive lochia, etc., of the possibility of septic trouble. Although, no doubt, primiparæ

were most liable to injuries in confinement, in his experience the most severe septic cases had not been primiparæ. Although in the days of antiseptic midwifery there ought to be no septic cases, yet he was sure puerperal insanity would still occur in persons of neurotic or insane inheritance. With regard to treatment, he would not go fully into the question, but would say that his practice at Bethlem Hospital had been that unless there were definite signs and symptoms pointing to some pelvic trouble or septic abortion, the uterus and pelvis were left severely alone. Only in very transient and some exceptional cases could the patient be treated at home, and in the large majority early asylum treatment gave the best chance of recovery.

Dr. Ernest White stated that during nearly thirty years spent in public asylums he had been called upon to treat many cases of puerperal insanity. Moreover in 1896 he had carefully collected his records, and contributed a paper upon the subject to the 'King's College Hospital Reports.' He thought Dr. Jones's proportion of recurring cases too low; probably 1 in 400 confinements was nearer the mark, for there were many which did not come to the asylums for treatment, and of which no records were obtainable. He would like to draw attention to certain of the mental symptoms, and to the temperature charts in this disease. The obscene language, erotic tendency, and self-abuse were probably of peripheral origin, from abnormal uterine conditions, altered lochia, etc. Hallucinations of hearing and sight were common, more rarely those of taste. He had not observed those of smell alluded to by Dr. Jones, nor did headache occur in his cases. The delusions were those of a persecutory type, and accounted for the early refusal of food, which the patient imagined was poisoned. There was a marked tendency to suicide by impulse, and to infanticide. Next as to the temperature charts: in nearly all his cases there was an elevation of temperature of from one to two degrees in the evening, with a morning fall of a degree or less, lasting from ten days to a fortnight; then a subnormal temperature for several weeks. In two or three cases there was long-continued febrility, and charts like those of enteric fever with evening exacerbation and morning remissions lasting a month or more, but followed by subnormal temperatures for several months. These cases he thought of septic origin; they did badly, and generally became chronic or died. Next as to causation: the most frequent cause was hereditary nerve instability. He had no experience of illegitimacy as a cause, and did not believe in it. The patients were not infrequently primiparæ over thirty years of age, and abnormal uterine conditions after confinement, to which these patients would be predisposed, were often exciting causes. The blood was always impoverished, with diminished hæmoglobin; hence ferruginous tonics were indicated. He had not found definite relapses

common, but of course the mental state varied much during the earlier stages. Frequent baths with scented soap were necessary on account of the perverted skin secretion. Home treatment was certainly prejudicial to recovery in most cases, from want of moral control, from contact with relatives, and from the necessity of instrumental feeding, often thrice daily. In the case of a lady with ample means, to whom he was called in consultation, the house was converted into a complete private asylum, for which, with its grounds, it was admirably adapted; but the treatment failed from the want of moral control—the patient knew she was at home. He advised removal to an asylum, and she quickly recovered.

Dr. Griffith would confine his remarks to only a few points out of the many which had arisen. Dr. Jones had referred to the onset of lactation as a cause of marked constitutional symptoms and pyrexia; he could assure him from the evidence, not of hundreds, but of thousands of records at Queen Charlotte's, that this is not the case unless some definite pathological complication arises. With regard to the insanity of pregnancy he agreed with the prevailing opinion that there were no specific forms; pregnancy might be a complication to insanity or the reverse, but there is a group of cases quite distinct, in which the main feature is the apprehension of the patient, either real or simulated, that unless the pregnancy is terminated she will become insane. He looked upon all such cases with the gravest suspicion, not of insanity, but of rather the reverse, as an ingenious method of putting strong pressure on their medical advisers to produce abortion. He had seen no exception to this in the cases in which he had been consulted. As to premonitory symptoms, he regarded the refusal of food as of equal importance as sleeplessness, and he was sure that in general practice the absolute necessity for forced feeding, even by the nasal tube when necessary, was not properly recognised as the essential means for saving life, just as absolute isolation from husband, children, and friends was essential for recovery of mind; and with regard to this isolation, he was in the habit of advising removal from home in cases where perfect isolation and the most skilled nursing were not obtainable at home.

Dr. Seymour Tuke, while fearing that the alienists had been given too large a share in the debate, was glad that some one had stood up for the women who had borne illegitimate children, for some were certainly cast in a higher mould, and did feel the mental distress which Dr. Jones had laid down as a possible factor in the ætiology. Dr. Tuke pointed out three factors in favour of asylum *versus* home or lodging treatment: first, that it was hard upon the patient to be under control where she had heretofore been in command; second, the possibility in a well-ordered asylum of instantly changing the attendants if

necessity arose through the patient taking a dislike to any of them; and third, the fact that a home where restraint had to be applied of any kind was likely to have less pleasant associations and memories after recovery. He mentioned how acutely those who devote themselves to their asylums felt the unjust and uncalled-for criticisms of some people who ought to know better. He strongly agreed with previous speakers in the necessity for good feeding, and urged the early resort to artificial feeding if called for. While allowing the great usefulness of alcohol, the danger of forming a habit must not be lost sight of.

Dr. Claye Shaw said that, of the many points raised by Dr. Jones, one of the most important was that relating to the entity of a mental disorder due to the puerperal state; and though the author of the paper seemed to incline to the fact of the actual existence of a specific disease, he had yet voiced it in no very certain tones, and a similar hesitation had been apparent in the utterances of other speakers during the evening. To him it was by no means an easy thing to be always sure about. It would appear that there are two classes of cases really distinct, but both characterised by the delusions, incoherence, and other mental symptoms supposed to be pathognomonic of insanity due to the puerperal state alone. Insanity, characterised by prominence of sexual mental demonstration, might occur in young women at the developmental epoch, or in women of middle or advanced age in whom there were no uterine or ovarian complications of any kind to be found, just as delusions of a sexual character might be seen in boys and men accompanied by acts of masturbation, and yet there was no occasion to attribute the symptoms to influence from the genital organs at the moment. When, however, the temperature was higher than is usually met with in acute insanity, and the symptoms came on shortly after parturition, there was a strong argument in favour of a direct connection between the mental and bodily states, especially when there was a history of hereditary taint, and with the probability of the presence of a septic condition. The theory that impressions from the viscera and especially from the sexual organs are transmitted to the central nervous system, and arouse ideas there which form all kinds of associated connections, is quite sufficient to account for the fact that sexual symptoms of a similar character and intensity may occur as the result of a lesion which is primarily central or of one due to external influence, whether caused by an auto-intoxication or by simple irritation. To show the importance of a correct diagnosis the speaker mentioned the case of a woman in whom maniacal attacks, characterised by sexual delusions and hallucinations, occurred regularly at the catamenial periods. From the regularity of the symptoms there appeared to be no doubt as to the sequence of cause and effect, and oöphorectomy was proposed,

but fortunately not carried out, for the patient recovered completely. The dependence of one condition on the other was merely a coincidence. Great care was therefore necessary before concluding that mental symptoms pointing to the implication of a portion of the organic system were really more than the projections of a strictly central affection, and from this point of view the remarks made by Sir John Williams were of the greatest importance,—those, namely, in which he had so strongly deprecated the curetting of the uterus, an operation the advisability of which had been mentioned in the paper.

Dr. Amand Routh urged the desirability of having intermediate "receiving-houses" or nursing homes, where women suffering from such temporary insanities as those under discussion could be received and treated. Such a plan would avoid the stigma of having been in an asylum, and would make it much easier to get the friends of the patient to agree to her removal.

The President thought that obstetricians saw these cases, as a rule, at a much earlier stage than did the alienists. Perhaps for this reason, and because of the shortness of time, the introducer of the subject had said but little about diagnosis. As a fact, when the patient was admitted into an asylum the diagnosis had been made; whereas in the earlier stages it was not always easy to say that a case amounted to actual insanity. He considered with Dr. Griffith that the refusal of food was a far graver symptom, and pointed much more certainly to insanity than did sleeplessness. This, and headache too, occurred not infrequently in patients who never developed insanity; whereas refusal of food—and by that was meant not mere anorexia—was practically only associated with insanity. In all fatal cases he emphasised the importance of making a thorough *post-mortem* examination, not merely of the brain, but of the other organs. For probably pure insanity was rarely fatal. He mentioned a case that presented the ordinary symptoms of puerperal insanity. She died, and a *post-mortem* examination revealed suppuration extending from the parametrium behind the fascia up to the kidney.

Dr. Jones (in reply), after acknowledging the distinction which was conferred upon him by asking him to read his paper upon "puerperal insanity," stated that when he consented to open the discussion it was less with the idea of imparting information than of eliciting and learning the opinion of others, who practised in what to him was an "unknown land." He hoped the full and complete discussion might lead to a more comprehensive grasp of the cause or causes of this form of insanity, and might thus modify, if not prevent, the occurrence of this serious and grievous affliction. In his reply he thanked Sir John Williams for the definite view he expressed as to the induction of premature labour. Sir John Williams did not consider abortion to be a remedy for the cure

of the insanity of pregnancy, and the experience he quoted of mania following abortion supported his conclusion. Sir John Williams was also against the operation of "curetting" the endometrium, giving as his reason the unjustifiability of leaving a large exposed absorbing area, which did so much to favour toxæmia and fatal blood-poisoning. He was glad that so high an authority as Sir John Williams recognised that a special form of insanity did appear to be simultaneous with, if not an effect of the full development of the reproductive organs, and the interesting observations from comparative anatomy supported his views. In regard to the association of albuminuria with multiparous pregnancies, Sir John Williams' experience agreed with the present views upon immunity. As to phthisis and pregnancy, the writer's experience was quite the opposite in regard to general paralysis, which made slower progress after the stress of pregnancy and parturition had passed. In regard to Dr. Blandford's remarks, there certainly was a difference between the insanity of septicæmia and toxæmia. The latter was similar to that from toxins generally, and was of the nature of a busy delirium, which could be overcome by a sufficiently strong afferent stimulus, such as a mental effort, and the patient could be roused to rational conduct and coherent conversation; but the condition could not be sustained, incoherence and busy delirium again recurring. In septicæmic or pyæmic cases the mental condition which accompanied was of a low muttering with no awakening of the reasoning faculties, but it is not improbable that these were states consequent upon different poisons or degrees of the same poisoning. He was glad to find that Dr. Blandford agreed with his views in regard to sleeplessness, and the necessity there was for mental quietude during the period of recuperation following upon parturition.

Dr. Herman touched the key-note of treatment when he referred to sleep and food as the main remedies, but these are not to be obtained unless with the aid of properly trained and skilled assistance both medically and in nursing. He agreed with Dr. Herman that alcohol is a powerful and most useful remedy, being a stimulant and a sedative if not a food. Dr. Herman asked as to the definition of hysteria, and referred to hysterical fits. Dr. Jones agreed with Dr. Percy Smith in his remarks upon hysteria, but he himself did not allude to nor specially imply the occurrence of "fits," and would rather consider hysteria as a definite or prominent symptom of that loss of inhibition over the higher centres which indicated a neurotic or psychopathic taint. He agreed with Dr. Herman's remarks fully as to the marriage of hysterical persons, and the consideration of what the prohibition of matrimony meant in the two sexes.

Dr. Mercier, whose remarks are always philosophical and logical, urged that insanity was one and indivisible. Dr. Jones fully

agreed with the statement that insanity meant a perversion of consciousness sufficiently marked to change conduct, but when Dr. Jones urged that there was a special form of insanity in association with the puerperal condition he implied that the great disturbance, mental and physical, involved in pregnancy and parturition acted as a distinct and exciting cause of this perversion of consciousness which we call insanity. Dr. Mercier did not appear to him to appreciate sufficiently fully the effect of a great emotional shock in the causation of insanity, and questioned the great prevalence of insanity in single women and first pregnancies. In the former Dr. Mercier considered the break-down to be due to a lower moral standard and code, and to the lower resistance which persons bearing these stigmata exhibited to stress; but in Scotland 25 per cent. of all puerperal insanity occurred among single women, and it would be too much to say that one in every four cases of insanity in this class in Scotland was a degenerate. Dr. Jones rather agreed with Charles Kingsley's views as to the causes of illegitimacy, viz. that if suitable environment were provided, in the form of houses, wages, accommodation, etc., for men who wished to marry, this lapse, not on the part of degenerates only but also of the vigorous and comely, would be less prevalent; and we know that in Scotland, as well as in other country districts, there is almost culpable neglect in providing suitable housing accommodation and occupation. Dr. Mercier referred to the frequency of sleeplessness but not of headache; but headache is a subjective symptom, whereas sleeplessness is especially objective, and Dr. Jones felt very convinced from the information of friends—and this was obtainable in most cases of puerperal insanity as contrasted with the histories obtainable in other forms of insanity—that headache and sleeplessness were parallel and cardinal premonitory symptoms. Dr. Mercier felt that Dr. Jones made too much of home treatment, but the stigma appertaining to certified insanity and detention in an asylum was so great a disability, and such a ban upon the sufferer, that every opportunity of home treatment should be tried before the patient was sent to an asylum. This ban was not limited to the sufferer, but it also affected the head of the family and many of those dependent upon him. Only the other day a young man was refused as a first-class life because his mother was an inmate of an asylum, and Dr. Jones felt it to be his duty to avoid so far-reaching a prescription if this were in any way possible. Dr. Mercier does not lay so much stress upon the reappearance of the menses as appeared to Dr. Jones to be justifiable, and only when the menses coincided with recovery were they to be looked upon as an element in prognosis. It must be remembered, however, that although in some cases the reappearance of the menses was not coincident with recovery, in all cases of recovery the menstrual periodicity returned.

Dr. Champneys also agreed with Dr. Jones that sleeplessness was a frequent if not constant precursor of insanity, but Dr. Champneys did not think that insanity was more common in single women, and he asked whether the moral standard in single women was lower than that in married. Dr. Jones could not say that this was so. Moreover the fact that in the district whence London County asylums drew their patients the ratio of illegitimate births to legitimate was 3 per cent. in the insanity connected with reproduction, the ratio of single to married was 12 per cent., which appears to argue a distinctly greater liability to insanity among single women. Moreover in 33 per cent. of married women insanity occurred at the first confinement, and in addition to the stress connected with the awakening of maternal instincts for the first time there were in single women those strong emotional disturbances connected with fear, disappointment, neglect, and shame. As to toxins being the chief cause, if this were so, then how comes it that most of the cases of insanity occurred with the first confinement? and Dr. Percy Smith records it that in his experience septic cases were most often the third or later confinements.

Dr. Andriezen referred to the indiscriminate use of terms in insanity, and rightly so, but it is the cause of confusion in metaphysics and in psychology, and possibly in other sciences. Dr. Jones believed that Dr. Andriezen had done much to make definitions clear, and he appreciated the remarks of Dr. Andriezen as to the increased incidence of puerperal insanity among single women in different countries. Dr. Jones fully believed this, and felt that insufficient notice was being taken of emotional shock and mental causes in the production of insanity. Dr. Jones referred to the recommendation of Dr. Andriezen that married women who had once been insane should not again become mothers, but he feared it was a counsel of perfection, as he knew and quoted from his own experience. His own advice to discharged patients used to be that cohabitation may be resumed, but no pregnancy should take place; and it is needless to say his advice was absolutely disregarded, and he has since ceased to urge it. Moreover he is now convinced that it were best not to have offered it.

Dr. Mott's remarks in regard to symmetrical gangrene and toxic cases were very interesting, but such cases had not fallen to Dr. Jones' experience. He was also greatly interested in the suggestion which Dr. Mott gave as to the long-continued apparent toxæmia which pregnancy involved to the mother, and the great proportion in which lecithin (the phosphorus-containing element) existed in the infant, and the ratio of the brain weight to that of the body in the new-born infant. Dr. Jones looked forward to the result of further investigation which Dr. Mott proposed making into the condition of the blood of puerperal cases; his

results in cases of general paralysis had been highly instructive.

Dr. Percy Smith, who has himself written an interesting article upon this subject in 'Quain's Dictionary,' takes exception to his figures. They certainly do not quite agree with his from Bethlem, neither do they quite tally with Batty Tuke's statistics, but they harmonise pretty closely with Clouston's. The apparent discrepancy can, however, probably be explained by the fact that Claybury receives all rate-aided patients from the county of London territorially situated in the east, whereas Bethlem Hospital is supplied from the poorer middle classes; those who can afford it from this class are treated at home, others are sent to licensed houses, private asylums, or hospitals, of which Bethlem is one. It is interesting to find that Dr. Percy Smith does not regard headache as a premonitory symptom in addition to sleeplessness, for it certainly was frequently reported by the friends, and not infrequently by patients themselves in his own cases. Dr. Percy Smith referred to the various subdivisions of insanity in the different groups of the author's paper, but he purposely avoided this (taking only general types), as he wished to obtain information on the broad issues raised as to toxæmia, heredity, pathology, and the induction of labour rather than details as to classification. Dr. Percy Smith states that his septic cases occurred in the later, such as third or subsequent pregnancies; this fact is interesting. Two per cent. of deaths is low, and Dr. Percy Smith should be congratulated. The deaths recorded in his own cases include all the forms of insanity described, viz. those of pregnancy, those after confinement, and those accompanying lactation.

Dr. White's calculation of the incidence of puerperal insanity is, he ventured to think, a little too high. He based his statistics upon the birth rate of London, and believed it to be lower than Dr. White states. He referred to the exhalation from the skin in cases of puerperal mania, but in all cases of acute mania, males and females, this is recorded. As to its cause, it should be remembered that the brain and the skin are both developed from identical layers of the blastoderm, viz. the epiblastic, and when the higher functions are impaired or perverted, those of a similar embryonic formation may also tend to be affected. He only threw this out as an hypothesis, having no facts to support it. Dr. White stated that both infanticide and heredity are greatest in puerperal cases, but his statistics served him differently. He found both infanticidal and suicidal impulses to be most common in lactation cases, next among the puerperal, and lastly in those of pregnancy. Dr. White states that in his cases albuminuria was frequent, and occurred in many. It would be interesting if he could give the actual proportion.

Dr. Griffith's remarks he considered to be most important and

equally instructive. If there is an insanity during pregnancy and during parturition of a transient nature, and with strong infanticidal tendencies, this would account for tragedies which are recorded at this period. He looked upon Dr. Griffith's experience as of great medico-legal interest. He was also instructed to hear from him that there are no febrile symptoms concurrent or immediately preceding the onset of lactation. As to sleep, he asks for information in regard to drugs. Sulphonal has been given for motor restlessness. He advised its not being administered at all. It is a strong neuron toxin, and can in some cases cause insanity to become irrecoverable. Opium is contra-indicated, as it causes cerebral erethism. Morphia may produce sleep. When it does there may be great alarm whether the patient will come round. Once it acts, it acts powerfully and dangerously. He had used hyoscine and many other drugs, but had found chloral hydrate and bromide of potassium to be the best and most soothing. The crux of treatment, again, is decisive feeding, and with the nasal rather than the mouth tube; alcohol with fluid food is the best sedative, as Dr. Herman has already said. He considered, with Dr. Griffith, that nurses who have had special training with mental cases are absolutely necessary for puerperal cases. Trained hospital nurses have been known to run away and leave in disgust cases of puerperal mania when patients (as invariably in this form they do) use filthy and obscene expressions, and when they exhibit immodest behaviour. Moreover they understand the necessity of safeguarding against sudden suicidal and infanticidal impulses, and they are experienced in the import of hallucinations. He would further counsel avoiding sending patients to asylums of whatever kind.

Dr. Tuke, in his remarks, appeared to think that he does not sufficiently champion the asylum. He would beg to affirm, in the strongest words at his command, that they need no defence. They are humane, they are staffed by conscientious persons who have special experience, and who have devoted their lives, often at great personal risks, to work which is essentially self-denying, and they offer the best means to recovery; but there is a borderline to be passed before they get there, which involves the reputation and the living of those related to the patient, as well as her own in society, and the consequence of her legal taint, once certified, reacts most unfavourably upon her own feeling of self-respect. In spite of the many advantages, he would again caution care in sending patients to an asylum.

Dr. Claye Shaw referred to the erotic delusions which are so prominent in this form of insanity, and also to the recommendation of oöphorectomy in some such cases. He evidently agrees with the views of Sir James Simpson that the organ diseased may give a colour to the delusions. If, however, the ovaries were indiscriminately removed, it would be necessary to include

in the participants of this vigorous treatment probably all epileptics and the majority of religious devotees and ecstatics, some of whom have founded sects, and have been canonised by posterity as having lived saintly lives, and are recommended as examples worthy of imitation, and as beacons to illumine the weary pilgrimage of frail humanity. There is no doubt, however, that in these material days too little importance is laid upon mental as against physical causes of insanity.

Dr. Routh's question as to reception-houses for the care of transient insanity is, he believed, under consideration elsewhere. The Lord Chancellor is stated to have a new Lunacy Bill ready for the consideration of Parliament in February next, but whether he will think fit to introduce this change is at present not known. Whatever changes are introduced will need very careful safeguarding against any abuse of the liberty of the subject, which inalienable right of a British subject may be considered quite safe in his custody.

The President (Dr. Horrocks) emphasised in a categorical imperative the necessity of a thorough, full, and complete post-mortem examination in all cases of death from puerperal insanity, and when he said that these examinations are carried out either by or under the direct supervision of Dr. Mott, no doubt he will be satisfied.

In conclusion, he felt that he had come far short of any expectations which may have been formed upon the results of his introduction to the discussion, but the latter had been full and representative, and he very cordially acknowledged the kind way in which the speakers had commented upon the paper, and also the way in which it had been received.

FEBRUARY 4TH, 1903.

PETER HORROCKS, M.D., President, in the Chair.

Present—51 Fellows and 5 visitors.

Books were presented by the Radcliffe Librarian, Guy's Hospital Staff, the Medical Society, and Dr. Teacher (Glasgow).

Ernest Wool Lewis, M.R.C.S., L.R.C.P., was admitted a Fellow of the Society.

Frederick Edge, M.D.Lond., F.R.C.S.Eng. (Wolverhampton); Edith Boardman, M.D.Brux., L.S.A.Lond. (Hyderabad); John Harold Philbrick, M.B., B.Ch.Cantab. (Ingatestone); and George Fourquemin Vincent, F.R.C.S.Edin. (Woking), were declared admitted.

The following candidates were proposed for election:—Louisa Garrett Anderson, M.D., B.S.Lond.; Maud Mary Chadburn, M.D.Lond.; John Hazelwood Clayton, M.B. Lond.; Alice Mary Corthorn, M.B., B.S.; William Turberville Farncombe, M.D.Brux., L.R.C.P.Lond.; John Furneaux Jordan, M.B., F.R.C.S.; Herbert Malins, B.A.Oxon., M.B.Edin.; Alex. Wathen Nuthall, F.R.C.S.Eng.; William Alexander Potts, B.A.Cantab., M.D.Edin.; Ernest Smallwood Savage, M.B.Oxon., F.R.C.S.Eng.; William Mott Whitehouse, M.D.Durh.

William Edward Moore-Ede, M.B., B.C.Cantab., was elected a Fellow.

DIFFUSE MENINGEAL HÆMORRHAGE IN INFANT AFTER NORMAL LABOUR.

Shown by A. Walter Sikes, M.D., M.R.C.P.

The specimen shown was that of a child which had only survived about twenty-four hours.

The mother, aged 32, had been admitted into Queen Charlotte's Hospital for her first confinement. The whole labour lasted about twelve hours, the second stage about three hours, there being nothing abnormal noticed at the time; the forceps was not used. The external measurements of the pelvis were normal, and the child's head rather below the average circumference. The presentation was vertex, L. O. A.

There was some difficulty in resuscitating the child, and on the evening of its birth it had convulsions involving both arms and the legs, especially the left. On the next morning there were severe general convulsions, in which the child died.

At the post-mortem the bones of the vault of the skull were found to be very poorly ossified and almost parchment-like; there was hæmorrhage into the scalp, into the membranes of the brain, and over the whole surface of the hemispheres, and around the base and the cerebellum; there was, however, no large collection of blood in any one place.

There was no blood in the ventricles or in the substance of the brain.

There were no visceral hæmorrhages.

Reference was made to Dr. Spencer's paper on "Visceral Hæmorrhages in Stillborn Children," 'Obstet. Trans.,' 1891.

The case was shown as an example of the amount of hæmorrhage which may occur during apparently normal labour when the cranial bones are badly ossified and less resistent to pressure than usual.

Dr. Sikes (in reply to the President) mentioned that in about a dozen cases in which he had examined the medulla and pons macroscopically at Queen Charlotte's Hospital, he had not seen hæmorrhage into the brain in this position.

Dr. Herbert Spencer thought the explanation of the hæmorrhage given by Dr. Sikes was the correct one. In the paper read before this Society in 1891 he had noticed this incompletely ossified condition of the skull as a cause of hæmorrhage; it appeared also, in some cases, to be due to the softness and depressibility of the anterior lower corner of the parietal bone which lay over the great anastomotic vein, and on being pressed upon caused congestion of the other meningeal veins. Meningeal hæmorrhage might be produced in these soft skulls by a normal labour, but it was most marked in difficult and especially forceps deliveries, every one of the children delivered dead by the forceps having been affected in this way.

A CASE OF FŒTAL ASCITES.

Shown by T. W. Eden, M.D.

The history of the labour was as follows:—The patient, an unmarried primipara aged 18, was admitted to one of the workhouse infirmaries in London on January 17th, 1903, having then been for some hours in labour. On admission it was noted that the external os was of about the size of half a crown, the membranes were ruptured, and the presentation was a footling. Pregnancy had advanced to about the end of the eighth month. The progress of the labour was very slow, and on the morning of January 18th the practitioner in charge of the case administered one drachm of liquid extract of ergot with one ounce of brandy, and repeated the dose twice during the course of the day. At 8 p.m. he found the foot of the child in the vagina; in his own words it was "quite black and putrid." He made traction upon the limb to deliver the breech, but the foot separated at the ankle. He then seized the remainder of the limb, which soon separated at

the hip-joint. Traction upon the other leg failed in the same way. He then attempted to seize the breech with a pair of craniotomy forceps, but in his own words, "every time traction was made they came away with a piece of putrid skin." Being unable to make out the cause of the obstruction he sent for assistance to my colleague, Dr. Amand Routh, in whose absence the message was sent on to me.

On examining the patient myself, the first thing that struck me was the large size of the uterus; although labour was a month premature, and part of the body of the fœtus had been delivered, the uterus was quite as large as an ordinary full-time pregnancy. The patient felt no pain, but the uterus was firmly moulded around the fœtus, the parts of which could not be felt. Upon vaginal examination I had at first some difficulty in recognising any anatomical landmarks in the presenting part, but at length discovered the sacrum lying high up posteriorly. It was therefore clear that the distended abdomen formed the presenting part, and was the cause of the obstruction to delivery. I thereupon opened it with a pair of scissors, and between two and three quarts of thin yellowish fluid escaped. The body of the child was delivered naturally within a few minutes; the placenta was adherent, and had to be removed by the fingers.

The body of the fœtus showed marked signs of maceration. On laying the abdomen open the peritoneal cavity was seen to be enormously enlarged; the liver, stomach, and intestines were crowded into the vault of the diaphragm; there were no peritoneal adhesions and no sign of peritonitis in any part. The bladder was distended to a moderate extent; the external genitals were absent, having been torn away by the forceps during the unsuccessful attempts at delivery. A probe passed from the bladder into the urethra showed this channel to be impervious. From the absence of the uterus it was clear that the sex of the fœtus was male. The heart was normal in all respects; owing to its macerated condition the liver and portal cir-

culation could not be thoroughly examined, but appeared normal. There was no distension of the ureters, and the kidneys were normal.

The cause of the ascites in this case remains obscure. Dr. Ballantyne ('Ante-natal Pathology') speaks of peritonitis and syphilis as the commonest causes. The former can in this case be excluded, and although exclusion of syphilis is a more difficult matter, there was no positive evidence of its existence in either parent. It is curious that only one case has been recorded in which fœtal ascites was caused by portal obstruction; it was recorded by Dr. Herman in 1881, the cause of the obstruction being a tumour of the adrenal body. The association of ascites with distension of the bladder appears to be common, for Dr. Ballantyne has collected fifty-eight cases in which these conditions co-existed.

The patient made a good recovery.

Dr. Herbert Spencer had met with about six cases of fœtal ascites. In some of these the amount of fluid was small; but there was a large amount of lymph binding the intestines together, and the absence of any obvious cause for this peritonitis, and the presence of bone disease and the history, led him to think that in these cases the ascites was due to syphilis; but in other cases where there was a large quantity of fluid present, as in Dr. Eden's specimen, he had not been able to discover the cause of the effusion.

Dr. Malins said that the specimen exhibited was interesting for two reasons—the difficulty in diagnosis, and the probable origin of the large accumulation of fluid in the peritoneal cavity. Sir James Simpson many years ago called attention to this form of embarrassment, and mentioned some cases of its occurrence. Dr. Malins remembered one instance in which similar difficulty in delivery had happened. In this instance the origin of the fluid was, at the time, believed to be due to tubercular disease. The evidence of syphilis, and the manner in which it acts in the production of this condition, are not easy to obtain or to prove. He was inclined to think that it was adduced generally in the absence of other known or ascertained causes.

AN UNUSUAL CASE OF SARCOMA OF THE OVARY.

Shown by J. Inglis Parsons, M.D.

The chief points of interest about this case are the absence of the usual symptoms of malignant disease, and the rapid recurrence of the growth after removal.

Mrs. M. E. B—, aged 33, was sent to me by Dr. Vaughan Jackson, of Potters Bar. She had had one child seven years ago, and one miscarriage at four months in June, 1901. She was admitted to the Chelsea Hospital for Women May 1st, 1902, complaining of swelling in the abdomen.

Menstruation had been regular until a month ago; since then there had been irregular losses.

She first noticed swelling in the abdomen in June of last year. For the last four months there had been some pain in the abdomen on sudden movement, also some pain in passing water. The bowels were confined.

Examination showed a mitral systolic murmur. The lungs were healthy. The temperature was 101·2°. The abdomen was occupied by a large rounded, irregular-shaped swelling, extending up to the ribs, most prominent below the umbilicus. It was dull on percussion. No fluctuation or thrill to be made out. Both flanks were resonant. The tumour felt hard in some parts, but elastic in others. *Per vaginam* the uterus was found retro-displaced, not enlarged. Cervix firm, no blueness of vagina.

Diagnosis.—Multilocular ovarian tumour.

May 9th.—Under ether I removed the tumour in the usual way, assisted by Dr. Bonney. It presented the appearance usually seen in a multilocular ovarian tumour. Some of the cysts were tapped, but the contents were too gelatinous to flow, and a large incision had to be made to deliver the tumour whole. There was no ascites, and only

a few adhesions to omentum, which were tied off. The pedicle was rather thick and more fleshy than usual, but was tied in two parts by an interlocking ligature. The tumour was found to spring from the left ovary.

The right ovary was found to be normal in size, but bound down by recent adhesions. These were separated, the ovary freed and left in the pelvis. The wound was sewn up in three layers.

The patient's temperature, which had touched 102° F. just before the operation, fell to normal the same day, and remained so for fourteen days. The large incision united by primary union, and the stitches were removed on the sixth day. So far the patient had made an uninterrupted recovery. On the fifteenth day she complained of pain, and the house surgeon, Dr. Darling, noticed some swelling in the left iliac region, and also behind and to the left of the uterus. The temperature rose to 100·4°. Patient's general condition good. The swelling, however, continued to increase, but no rigors occurred, and the temperature did not rise above 100·4°, so I concluded there was no pus, and waited.

By the 4th of June, twenty-six days after the operation, as the patient's condition was getting desperate, the house surgeon telegraphed for me, and I reopened the abdomen to find a huge mass of new growth extending up from the pelvis to the abdominal wall, and matting everything together. The patient died the next day.

Dr. Taylor, the Pathologist, gives the following report on the tumour:—"A large multilocular ovarian adenomatous cyst, containing seven pints of red grumous colloidal fluid. Exterior of cyst wall, though quite smooth, is lumpy and tuberose. The interior of all the cysts is smooth and glistening, and free from papillomatous growths. The thickness of the cyst wall varies much, in some places being thin and membranous, in others half an inch thick and fleshy. The contents of the cysts varied much in consistency and colour, some being grey and very viscid, some dark red and more fluid."

Post-mortem report by Dr. Taylor :—" Examination sixty hours after death. Well-nourished body, with much abdominal distension. Examination of abdomen only allowed. There is an abdominal incision reaching from two inches above the umbilicus to just above the pubic symphysis, which is well healed except in the middle, where there is a sinus with a gauze drain. On opening the abdomen in the middle line a large quantity of yellow thin fluid escaped, followed by reddish-brown blood-stained fluid, several pints in all.

"The incision in the lower half of the abdomen came straight upon a thick mass of growth in the peritoneum. On cutting through this the whole pelvis and a greater part of the abdomen were found to be occupied by similar growths, in which were embedded the uterus, ureters, and the greater part of the omentum and intestines. The uterine appendages could not be recognised. There was also a large mass of growth in the glands along the front of the lumbar spine. It was with great difficulty that the mass could be removed. There were small masses of secondary growths in the liver and spleen. The kidneys were both much enlarged and showed dilated calices, and were also soft and easily lacerated. The ureters were much distended."

Microscopical examination revealed a round-celled sarcoma.

Remarks.—Sarcoma of the ovary is not very common over thirty, and is more often met with in younger women.

In my own experience of these cases there is usually some ascites present, and generally extensive adhesions. In this case there was no ascites and hardly any adhesions. In fact, both before and at the operation, there was nothing to distinguish the tumour from an innocent ovarian.

The presence of a temperature of 102° before the operation, and the immediate fall to normal after removal of the tumour, is very significant, and is suggestive of a parasitic

origin of the tumour, as there were no signs of peritonitis or of sloughing to account for it.

The rapid recurrence after twelve days and the extraordinary rapidity of the growth are unique, and I have never met a case like it before, especially as the patient made a rapid recovery from the operation with primary union of an extensive incision.

KURZ NEEDLE-HOLDER.

Shown by Herbert R. Spencer, M.D.

Dr. Herbert Spencer showed a Kurz needle-holder which took the form of a forceps, one blade of which held a short barbed needle, which, on closing and opening the forceps, was caught and withdrawn by the other blade. He had found it very useful for passing ligatures through the broad ligament, especially in vaginal hysterectomy.

SOLITARY INTERSTITIAL FIBROID REMOVED BY ABDOMINAL MYOMECTOMY.

Shown by Mr. W. S. Handley (with Dr. Lockyer).

The patient, a young woman of 29, was married in the early part of 1902. There has always been pain the day before the onset of the period. No increase in the amount lost followed marriage. After a normal period at the end of August, 1902, pain came on about the middle of September in the hypogastric region, and lasted more or

less until November 4th, when a miscarriage occurred at three months, for which she was attended by Dr. Davidson, of Uxbridge Road. On getting up, twelve days later, a flooding occurred, followed a few days afterwards by a second hæmorrhage, which necessitated plugging. She left her bed finally on December 10th. There was subsequently a mattery discharge, and she attended the Samaritan Hospital as an out-patient of my colleague, Dr. Lockyer. He found what appeared to be a right cornual fibroid, and asked me to see the case with a view to exploration.

There was a hard, movable, globular mass filling up the right side of the pelvic inlet, and moving with, though quite distinct from, the cervix. The sound could only be passed one and a half inches, so that evidently the uterine cavity was deformed.

I was inclined to think the mass was a solitary fibroid growing into the right broad ligament. There seemed every prospect that the patient's future history would either be one of repeated pregnancies accompanied by pain, and terminating in abortion with subsequent floodings, or that if the fibroid grew sufficiently to produce sterility it would itself become the cause of symptoms necessitating hysterectomy. The fibroid was solitary and of very moderate size, and in every way the case seemed suitable for exploration with a view to myomectomy.

Mr. Doran kindly saw the case for me, and agreed with the opinion of Dr. Lockyer and myself. The risk was explained to the patient, who decided in favour of operation.

On opening the abdomen (January 13th) I found the uterus rotated to the right, and somewhat dextroflexed, so that its anterior surface looked downwards, forwards, and well to the right. It was delivered without difficulty, the patient being in the Trendelenburg position. The mass delivered was globular and hard, and of about the size of a large orange. On its posterior surface high up was a transverse furrow, bounded below

by a softish rounded border, which was obviously the fundus uteri. The two Fallopian tubes came off from it at the normal distance apart.

The condition, therefore, was a solitary interstitial fibroid growing in the anterior wall.

A median longitudinal incision about three and a half inches long was now made along the anterior surface of the uterus downwards from a point near the fundus. The muscular capsule was about half an inch thick. The tumour was easily shelled out. The bleeding was free, especially from the cut edges of the capsule near the fundus, but not in any way alarming.

Commencing from the bottom, the bed of the tumour was obliterated, and the bleeding checked, by about four layers of fine interrupted catgut sutures, each passed fairly deeply in such a way that when tied the plane of the loop of the suture was parallel to the anterior surface of the uterus. The sides of the cavity were thus brought together in the median plane, and a rounded bulge was produced on the anterior surface of the uterus.

Finally, a continuous buried fine silk suture was used to invert the peritoneum.

A tiny fibroid nodule in the capsule of the tumour was removed during the operation.

For the first day or two the patient suffered from pains resembling after-pains, which were relieved by bromide. The temperature rose to 100·4° on the evening of the second day, and fell to normal on the morning of the fourth. It never rose again above 99·4°. The pulse did not rise above 106. There was slight hæmorrhagic discharge with small clots for a few days from January 15th, but no other complication except a slight iodoform rash.

PRIMARY CARCINOMA OF THE FALLOPIAN TUBE.

Shown by Dr. H. Russell Andrews.

A. T—, aged 48, was admitted to the London Hospital on June 15th, 1902, under the care of Dr. Herman, to whom Dr. Andrews was indebted for permission to exhibit the specimen.

History.—Married thirty years ago; she lost her first husband five years later. She was married again eight years ago to her second husband, who is living. She had one child twenty-nine years ago; no miscarriages. She had a "bad time" after her confinement.

Catamenia.—Since the birth of the child she has had severe aching pain for three or four days before each period. Menstruation was regular until two years ago, then became irregular. The last ordinary period was six months ago.

Present illness.—For two years the patient has had pain in abdomen, much worse during the last six months. She has not menstruated in the last six months, but has had a pale yellow discharge. For two years she has noticed a swelling in the abdomen, which she thinks has become smaller during the last six months. There is frequency of micturition, with some difficulty.

Abdominal examination.—The abdomen is distended; maximum circumference, halfway between pubes and umbilicus, is thirty-four inches. Circumference at umbilicus is thirty-one inches. There is a lump, dull on percussion, rising out of the pelvis.

Vaginal examination.—The mass felt on abdominal examination cannot be separated from the uterus.

Operation.—On opening the abdomen a thin-walled cystic swelling, of reddish colour, resembling bowel, was found. Anatomical landmarks were difficult to make out. The tumour was punctured with Spencer-Wells

trocar, and about four pints of smoky, blood-stained fluid evacuated. The tumour, which was found to consist of the left tube and ovary, was then removed. There was no evidence of gross disease of the right tube or ovary, but, as the patient took the anæsthetic badly, they were not examined minutely.

The patient made a good recovery.

Description of the tumour removed.—The specimen consists of—

1. Undilated isthmus of tube.

2. Greatly dilated ampullary portion of tube, with a papillary growth about the size of a golf ball, arising from the wall towards its proximal end.

3. An ovarian cyst of the size of a small cocoa-nut, containing sanious fluid.

Microscopical sections of the papillary growth (exhibited) show a dense fibrous stroma arranged in a papillary manner, covered by glandular epithelium arranged in acini, which are lined in most places by more than one layer of epithelium, undoubtedly carcinomatous.

The clinical history of this case resembles that of most cases of primary carcinoma of the Fallopian tube. The patient was near the menopause, and complained of pain and a watery discharge. The extreme dilatation of the tube is unusual. Whether the patient had suffered from salpingitis or not cannot be said with certainty, but the facts that she became pregnant a few months after marriage, was ill after her confinement, had been sterile since that one pregnancy, and had suffered since that time from congestive dysmenorrhœa, make it probable that there had been tubal inflammation.

Mr. Alban Doran asked if Dr. Andrews was certain that the cystic ovary was not the source of the new growth which had penetrated the dilated tube, as in Fabricius's case. He himself thought that the cancer had originated in the tube. It in that case represented malignant degeneration of a papilloma, itself more or less an inflammatory product, and in the great majority of reported cases of primary tubal cancer there was evidence of earlier inflammatory changes. Some observers claimed to have

detected primary cancer in a previously healthy tubal mucous membrane, but the evidence was not convincing.

In reply, Dr. ANDREWS said that there was no evidence that the ovarian cyst was carcinomatous.

ANNUAL MEETING.

The audited Report of the Treasurer (Dr. F. H. Champneys) was read.

On the motion of Dr. W. R. DAKIN, seconded by Dr. HENRY BRIGGS, the Report of the Treasurer, Dr. F. H. Champneys, was received and adopted.

Report of the Honorary Librarian.

I beg to report that the condition of the library is satisfactory.

The total number of volumes in the library amounts to 5801, of which 63 are periodicals. Of these 63 periodicals 20 are bound each year in two volumes.

During the year 66 volumes have been added. These comprise 47 separate books acquired by donation and 17 by purchase, together with 1 volume of tracts by donation and 1 by purchase.

The number of Fellows visiting the library has not been large. During the year the visits paid by Fellows have averaged 2 per diem. The number of books borrowed remains about the same as in the previous year.

I desire to take this opportunity of reminding Fellows of the inconvenience often caused to other Fellows and to the librarian by books being retained, instead of being at once returned to the library when no longer required. This specially applies to incomplete parts of works which have to be placed subsequently in the binder's hands.

I am pleased to record that a generous donation of books, some of them very valuable, was made by Dr. Heywood Smith.

ROBERT BOXALL.

OBSTETRICAL SOCIETY OF LONDON.

Abstract of Receipts and Payments for the year ending December 31st, 1902.

RECEIPTS.

1902.	£	s.	d.	£	s.	d.
To balance from 1901 . . .				347	11	7
„ (1) Annual Subscriptions, realising				454	14	6
„ (2) Composition Fees . .				30	9	0
„ (3) Midwives' Examination Fees				987	13	0
„ (4) Sale of 'Transactions'						
(Longmans) . .	61	12	4			
Do. do. (Society) .	12	14	10			
Do. Midwives' Questions .	1	1	0			
Do. „ Regulations	0	2	6			
Fines	2	2	0			
				77	12	8
„ (5) Interest on Debentures .	79	16	8			
Ditto on Deposit . .	8	2	8			
Ditto on Consols . .	15	10	4			
				103	9	8
				£2001	10	5

Audited and approved.

Tom Mundy, *Chartered Accountant.*

February 2nd, 1903.

PAYMENTS.

1902.	£	s.	d.	£	s.	d.
By (1) 'Transactions,' Vol. XLIII, Printing, Paper, Binding, Delivery, and Illustrations .				226	17	4
„ (2) Library:						
Books purchased . .	35	8	1			
Binding . . .	14	4	4			
				49	12	5
„ (3) Museum and Library:						
Rent	200	0	0			
Librarian's Salary . .	160	0	0			
Repairs to Furniture, Cleaning, Coals, Lighting, etc.	37	17	0½			
				397	17	0½
„ (4) Expenses of Meetings .				16	1	2
„ (5) Stationery, Stamps, and Printing . . .				43	15	3½
„ (6) Examination of Midwives:						
Fees paid to Examiners .	607	16	6			
General Expenses . .	142	8	5			
				750	4	11
„ (7) Extraordinary Expenses .				79	3	8
„ (8) Banking Expenses . .				0	6	8
„ Balance at Bank . . .	87	11	11			
On Deposit . . .	350	0	0			
				437	11	11
				£2001	10	5

F. H. Champneys, *Treasurer.*

The Report of the Hon. Librarian, Dr. Boxall, was received, and its adoption was moved by Dr. MALINS, seconded by Dr. HERBERT SPENCER, and carried.

Report of the Chairman of the Board for the Examination of Midwives.

I have the honour to report that during the past year, 1902, there have been 1274 candidates for the Society's Certificate. Of these 996 passed the examination, 260 failed, and 18 were absent from the examination.

It has been necessary, on account of the large number of candidates, to occupy two evenings in the *vivâ voce* part of the examination on the last three occasions, and at the November examination there were no fewer than 370 candidates.

The percentage of rejections this year has been a little higher than the average of all preceding years, viz. about 1 in 6 as opposed to 1 in 7.

The year 1902 has been an important one in the history of the Society, in that the Midwives Bill has become law, and the accomplishment of this result, for which the Society has been striving for many years, is mainly due to the unselfish devotion of some of our Fellows.

The examinations, therefore, which the Society has held since 1872 will, within a measurable period, be replaced by a State examination. Arrangements for this cannot, however, be completed for many months, and in the meantime the Society will continue to render service to the public welfare. W. R. DAKIN.

The Report of the Chairman of the Board for the Examination of Midwives was adopted on the motion of Dr. CHAMPNEYS, seconded by Dr. A. H. N. LEWERS.

The following gentlemen were declared elected to serve on the Council of the Society for the Session 1903–4:

President.—Edward Malins, M.D.

Vice-Presidents.—William Japp Sinclair, M.D. (Manchester); A. H. Freeland Barbour, M.D. (Edinburgh); John Phillips, M.A., M.D.; Herbert R. Spencer, M.D.

Treasurer.—George Ernest Herman, M.D.

Chairman of the Board for the Examination of Midwives.—W. R. Dakin, M.D.

Honorary Secretaries.—Amand Routh, M.D.; Montagu Handfield-Jones, M.D.

Honorary Librarian.—Robert Boxall, M.D.

Other Members of Council.—Comyns Berkeley, M.B., B.C.; John M. Biggs; Henry Briggs, M.B. (Liverpool); Murdoch Cameron, M.D. (Glasgow); Charles Owen Fowler, M.D.; Charles Arthur Goullet; Walter Spencer Anderson Griffith, M.D.; David Berry Hart, M.D. (Edinburgh); Arthur Corrie Keep, M.D., C.M.Edin.; Arnold W. W. Lea, M.D. (Manchester); Arthur H. N. Lewers, M.D.; William Rivers Pollock, M.B., B.C.; Harry Campbell Pope, M.D.; Edward Reynolds Ray; Thomas George Stevens, M.D.; Walter C. Swayne, M.D. (Bristol); Francis T. Tayler, M.B.; Charles J. Wright (Leeds).

Dr. C. Hubert Roberts proposed, and Dr. G. F. Blacker seconded, a vote of thanks to the retiring Vice-Presidents, Dr. Byers and Dr. Malins, and to the other retiring members of Council, Dr. Dickinson, Dr. Reid, Dr. Sinclair, and Mr. Taylor.

Dr. C. J. Cullingworth moved, and Dr. T. W. Eden seconded, a vote of thanks to the retiring Editor of the 'Transactions.'

Mr. Alban Doran regretted that he had not been able to see his way to continue at the editorial work for a few years longer. It was most instructive, as it forced the Editor to read through very carefully all that he heard at the meetings, which must include much that he had forgotten. His successor would find the work not a labour

of love; such a term could not be accurately applied to the revising of manuscripts and correcting of proofs, but rather an excellent agent in keeping him well informed about current opinion in obstetrics and gynæcology.

The President then delivered his Annual Address.

ANNUAL ADDRESS.

Ladies and Gentlemen,—Personally I am in favour of omitting these annual addresses altogether, for it seems to me that our time is too precious for us to listen to a *résumé* of the work done during the past twelve months. Those of you who have attended regularly know already what has been done, and those of you who have not so attended can easily find out by reading the latest volume of our 'Transactions.' When the matter was discussed at the Council, it was pointed out that the delivery or not of an address, and the length of such an address in case one was given, lay at the discretion of the President. However, by force of circumstances no choice is left to me this year, and so I must with your permission, and craving your patience, address a few words to you. It will be in the recollection of most of you that exactly twelve months ago this Society unanimously resolved to throw open its doors to legally qualified medical women. At the very next meeting, namely, in March, 1902, Dr. Mary Ann Dacomb Scharlieb, Dr. Ada Margaret Browne, and Dr. Florence Nightingale Boyd were proposed for election, and were duly elected in April. Dr. Florence Boyd and Dr. Ada Browne were admitted in May, and Dr. Mary Scharlieb in November, the difference in time being due merely to the fact that Mrs. Scharlieb did not previously present herself for admittance. In addition to these, who were the first ladies to be proposed and elected, we have duly elected Dr. Jessie George, Mary Thorne, Kathleen Bonnar, Janet Campbell, Edith Boardman, and Louisa Brandreth Aldrich-Blake.

Thus we have already ten lady Fellows, and before long there is no doubt we shall have more. I firmly believe and earnestly hope that the admission of these ladies will be beneficial to the progress of our Society, and that nothing but good will arise from it.

Another sweeping change made twelve months ago was the passing of a rule whereby authors of papers were allowed to publish in journals other than our own 'Transactions.' This has been largely made use of, with no detriment to us, and with conspicuous benefit to others. The more widely it becomes known the better.

During the past twelve months we have lost 6 Fellows by death, 19 by resignation, and 23 by erasure. Thirty new Fellows have been elected, so that there is a net loss of 18 Fellows. A year ago we numbered 637, and now we number 619.

Financially we are in a good condition, as is evidenced by the report of our Honorary Treasurer.

The valuable additions made to the Library, as detailed by the satisfactory report of the Honorary Librarian, maintains the high standard to which we have attained in regard to obstetric and gynæcological literature. Perhaps in time to come this library will be utilised to a greater degree than at present. But even now it is invaluable to any one who wishes to write an article on any subject in our special branch of medicine, and who wishes to have around him for ready reference books and journals and pamphlets pertaining to the subject in hand. It is for this reason that it has always seemed to me desirable to enrich our store of books, journals, and pamphlets as far as we possibly can, consistent with a judicious selection, and with the shelf-room at our disposal. The selection is in the competent hands of the Library Committee, and the shelf-room is fairly ample, though perhaps at no distant date we may find it too small.

After a very protracted struggle the Midwives Bill

has become the Midwives Act, and soon it will be no longer necessary for this Society to continue its examination of midwives. The utterly untrue taunt that we did it for a gain will be shorn of all point when it is shown that we give up this examination without the least regret. This Society has sustained considerable obloquy in its endeavour to provide poor women with skilled help in their hour of trouble. We have tried to spread the gospel of cleanliness, and we believe that we have to a large extent succeeded. But this task has now been taken up by the State, and therefore in a very short time our Board of Examiners of midwives will cease to exist, and the report we have had to-night from the chairman of that board is probably the last but one which you will receive. From that report you can to some degree estimate the value which the public have placed upon these examinations.

In future similar examinations will be carried on by the State, and this Society is to be congratulated upon the fact that the first Chairman of the new Board appointed by the State is Dr. Champneys, a past President of this Society, and one who has identified himself, not only with all the best interests of this Society, but with the progress of this movement for the education of midwives.

We congratulate Dr. Champneys on this high honour, and we equally congratulate the State on having selected one whom we consider unsurpassed in knowledge of the subject, and in ability for organising these examinations in the very best manner.

The standing Pathological Committee, which was instituted a year ago on the initiative of Dr. Walter Griffith, has done excellent work under the able Chairmanship of Mr. Alban Doran. Many specimens have been referred to it, and the careful reports appear duly recorded in our 'Transactions.'

I have so much to say in the rest of my address that, in giving you a *résumé* of the work done, I shall confine

myself to the papers, and shall not mention the specimens further than by stating that they were well up to the average in number, being fifty-six, and greater than the average in interest and importance.

During the year 1902 we had nine papers, of which the following is a short *résumé*.

In January Dr. Cuthbert Lockyer read a paper on "A Case of Chorio-epithelioma with Pulmonary Metastases."

The patient was 42 years of age, and had had seven children, her last confinement being three and a half years before admission to hospital. There was a history of three abortions, the last one being some ten years before the last confinement.

No definite history of a recent abortion could be obtained from the patient nor from her doctor, but for four months she had had a continuous loss of blood from the uterus. Pregnancy was suspected, and also malignant growth.

The patient was too ill on admission to permit of operation. She had pyrexia, foul discharge, hæmorrhage, and wasting, and she died some two months after admission.

On *post-mortem* examination the body of the uterus was found to be occupied in its entire extent by a growth, and on the posterior surface was a perforation, caused by the growth, into the peritoneal cavity. The cervix was free from growth. Metastatic growths were found in the lungs.

A most elaborate and careful microscopical examination was made, and the result is embodied in Dr. Lockyer's excellent paper. The uterine growth exhibited the well-known syncytial masses, and in the pulmonary metastases were found columns of large cells and vacuolated protoplasm, the cells resembling the large clear cells of the second layer of a villus wall (Langhans's layer).

Dr. Lockyer believes there are two kinds of malignant

growth met with in the uterus, which are difficult to distinguish, but which are of maternal and fœtal origin respectively. To the former he would limit Sänger's term "deciduoma malignum," and in this kind no syncytium can be found. To the latter he would give the name chorio-epithelioma, as being undoubtedly of fœtal origin. In this form syncytium is always found. Moreover he stated that the malignant sequela of the vesicular mole was always a syncytioma, which, if confirmed by subsequent experience, is a very important fact.

Whatever opinions may be held in regard to the theories of the source of this most interesting and important disease, we must all admit that this paper of Dr. Lockyer's is a valuable contribution to the elucidation of its origin.

In March Dr. McKerron read a paper on "Suppression of Urine after Labour." He gave details of three cases that had come under his own observation, and an abstract of three published cases.

The age of the women affected was under thirty, and they were not the subjects of chronic Bright's disease. In one case only did the pregnancy continue to full term. Nearly all the children were stillborn.

The most uniform and striking symptom was vomiting, and in two cases the pulse and temperature were depressed. The later symptoms in the fatal cases were vomiting, drowsiness, passing on to coma, muscular twitching, and contraction of the pupils. In two cases there were convulsions towards the close. The histories seemed to point to the existence of some defect in one or in both kidneys, which rendered them unequal to the increased strain of pregnancy. The shock and pain of rapid labour, he thinks, act as one of the causes of anuria, and in five of the cases it was very rapid. Unfortunately there was no post-mortem evidence to adduce.

The treatment consists in increasing the activity of the accessory channels of excretion without delay, to which

he thinks should be added the injection of saline solution into the rectum. He condemns the use of opium in anuria.

An interesting discussion of this rare condition followed, and no doubt, as cases arise in future, Dr. McKerron's valuable paper will be frequently quoted.

In April Dr. Lewers read a paper on "A Case of Primary Tuberculosis of the Cervix simulating Cancer, and treated by Vaginal Hysterectomy."

The patient was thirty-six years of age, and had been married eight years, but had never been pregnant. For nine months she had had irregular hæmorrhages in between the periods, the first of these bleedings coming on after coitus. She had pain in the left iliac region and a dull feeling round the lower part of her body. She had got weaker, but had not lost much flesh.

On examination the external os was patulous, and a soft friable growth was felt within it in the cervical canal as far as the finger could reach. It bled freely on touching, and cancer was therefore diagnosed and vaginal hysterectomy performed. The patient made a good recovery, and was well five years afterwards.

Microscopical examination of the uterus after lying in spirit for four years was made by the Clinical Research Association. There was no growth in the body of the uterus, but in the cervix tubercle was found, though not the bacillus. References are given to some of the literature on this subject.

There can be no doubt that in the past many cases of tubercle of the uterus have been put down as cancer. The fact that even Dr. Lewers was misled makes one feel that it is of the greatest importance that cases should be thoroughly examined microscopically as well as clinically by competent observers before they are classed as cancer or tubercle. May be some of the specimens labelled cancer on the shelves of museums would be shown to be tubercle if carefully examined.

In May Dr. Fairbairn read a paper on "Five Specimens

of Fibroid Tumour of the Ovary, with Observations on their Pathological Anatomy." The literature of this important subject was very fully given.

The five specimens described varied in size from a hen's egg to a tumour over four pounds in weight. In all the new growth had arisen within the ovary, and had affected only a portion of the stroma, leaving a considerable part of the organ as a separate and easily recognisable structure.

A short abstract of fifteen or sixteen similar cases which had been recorded was given. Clinical details of the cases were given, but the value of the paper is in the keen analysis of the pathological anatomy of these rare tumours.

In June Mr. Alban Doran read a paper on "Pregnancy after Removal of Both Ovaries for Cystic tumour."

The patient, after having one child, underwent ovariotomy for disease of the left ovary. She then had four more children, and when thirty-nine years of age the right ovary was removed for cystic disease. The periods recurred after this second operation, and she bore another child, after which they recurred again, but she attained the menopause at the age of forty-five.

Other recorded cases of pregnancy following removal of both ovaries were quoted, and it was pointed out that in every one a piece of ovarian tissue had been left behind at the operation; in other words, the ovaries had not been completely removed.

The question of the effect of ligature on the Fallopian tubes in regard to subsequent pregnancy was discussed. He suggested that in some cases where pregnancy follows ligature of the tubes, either the ligature loosens or else it ulcerates through the tube, which heals behind it, and without complete stricture of its canal.

In the discussion which followed, different methods of sterilising a patient by means of ligature or section of the Fallopian tubes were mentioned.

In July Mr. John W. Taylor read a paper on

"Ovarian Tumour obstructing Delivery; Posterior Vaginal Section and Ovariotomy during Labour; Operation and Delivery at One Sitting; Recovery."

The patient was 30 years of age, and in labour with her second child. A tumour in Douglas's pouch obstructed the delivery. The *pros* and *cons.* of the abdominal and vaginal routes having been carefully considered and weighed, the vaginal route was selected for operation. Fortunately it proved to be a simple ovarian cyst without adhesions, and so it was easily removed. The child was then delivered with forceps. The vaginal incision was partly closed by sutures, and a gauze drainage left in. Mother and child made a good recovery.

An interesting discussion followed, chiefly on the relative advantages of the abdominal and vaginal routes of operation in these cases.

In October Mr. John W. Taylor read a paper on "Complete Inversion of Uterus of Seven Months' Duration; failure of elastic pressure with repositors; operation of anterior vaginal cœliotomy, anterior hysterotomy and replacement; recovery."

The patient was 33 years of age, and was two days in labour with her first child before delivery took place. No vaginal examination was made after the birth of the child. The infant was not suckled. About four to five weeks later she had her first menstrual period, and she flooded for ten days. From this time she went on bleeding irregularly but frequently. Seven months after the parturition she was sent to Birmingham. Complete inversion of the uterus was diagnosed, and an attempt at reduction was made by the application of Tait's cup-shaped repositors. These having failed, it was decided to operate. The uterus was restored by means of anterior cœliotomy and hysterotomy. The patient made a good recovery.

In the discussion which followed, most speakers spoke of Aveling's repositor as being the best, the proper direction of the elastic pressure being maintained if need

be by packing the vagina round the inverted uterus with gauze.

In November Mr. W. Sampson Handley read a paper on "Paratubal Hæmatocele." He described the peritubal hæmatocele where the bleeding takes place through the ostium, but showed that an encysted hæmatocele adherent to the tube might be caused by a rupture of the tube, the rupture being enclosed in the wall of the hæmatocele. He founded his statements on a re-examination of a specimen in the St. Thomas's Hospital Museum, which had been removed from a patient by Dr. Cullingworth, and which was described in the catalogue as a sacculated hæmatosalpinx. Clinical details of the case were given, and then a careful description of the specimen, which seemed to bear out all the conclusions arrived at.

In the interesting discussion which followed, exception was taken to the name paratubal, on the ground that it did not convey to the mind the condition described.

In December Dr. Herman and Dr. Russell Andrews read a paper on "A Contribution to the Natural History of Dysmenorrhœa." They detailed a number of cases of dysmenorrhœa cured by dilatation of the cervix, with a number of others in which dilatation of the cervix produced no benefit. They thought that primary dysmenorrhœa was more likely to be cured by dilatation than that which is acquired. They also thought that spasmodic dysmenorrhœa was the kind of pain that was cured by dilatation, and that a constant pain was less likely to be benefited, especially when the pain preceded the menstrual flow. They found no evidence of such narrowing of the cervical canal as to mechanically hinder the flow of blood through it, but they thought it possible that some degree of smallness and rigidity of the canal might hinder the physiological dilatation of the canal which should take place during menstruation, and so provoke painful contractions of the uterine body. Several carefully prepared tables were given with the paper.

An interesting discussion followed, from which it

appeared that great diversity of opinion still obtained, both as to the cause of pain and as to the best method of dealing with it. The paper, however, was a valuable contribution to a vexed question, and whether the theories it contained should be correct or not, it is clearly worded and conceived in a scientific spirit.

Besides these nine papers read during 1902 I may mention the very profitable discussion on puerperal insanity, which was introduced by Dr. Robert Jones, of Claybury Asylum, at the last meeting.

Discussions on selected subjects are a great help, reflecting, as they do, up-to-date current opinion, and I am glad to be able to state that during the summer months a discussion on deciduoma malignum has been arranged.

Obituary Notices.

John Griffith Lock was born October 6th, 1840. He was the eldest son of the late Mr. William Lock, a former town clerk of Tenby. He went to Harrow and thence to Trinity College, Cambridge, where he graduated B.A. in 1863, and M.A. in 1866. He was a pupil at Addenbrooke's Hospital, and then at St. Bartholomew's in London. After graduating in medicine and taking the M.R.C.S. of England and L.R.C.P. of Edinburgh, and the L.S.A. of London, he settled down in his native town of Tenby. Here he founded, in conjunction with others, the Tenby Cottage Hospital, and became its first medical officer. For twenty-eight years he was medical officer of health for the borough, and for a long number of years medical officer to the Tenby Lodge of Odd Fellows, No. 2207. He was twice married, but had no issue. He died at the age of sixty-one in August, 1901, and at his funeral the mayor and corporation and magistrates, and the lifeboat crews of Tenby were present amongst many others.

John James Tweed was born at Bishop's Stortford in

Herts in 1819. He received his medical education at University College Hospital. He took the M.R.C.S. in 1842, and was elected a Fellow of our Society in 1864. He devoted himself largely to obstetric practice, and was the oldest inhabitant of Upper Brook Street, Grosvenor Square. He was very abstemious and had a very courtly manner. He was devoted to his work, and inspired confidence in his patients by an unostentatious but sincere sympathy. He died on February 22nd, 1902, at the ripe age of eighty-two.

He was a Fellow of our Society for forty-one years, and was on the Council in 1896.

Thomas Robert Lombe died in Torquay, at the age of eighty-one, on February 23rd, 1902. He received his medical education at St. Bartholomew's Hospital, and besides taking the M.R.C.S. and L.S.A., he graduated M.D. at the University of Aberdeen. He became a Fellow of this Society in the year of its foundation, 1859, and was on the Council in 1900.

He was physician to the Erith House Institution for Invalid Ladies, and consulting physician to the Western Hospital for Consumption.

James Neal was born in Birmingham in 1836. He studied medicine at Queen's College, Birmingham, and took the M.R.C.S. and L.S.A., and graduated M.D. in Aberdeen. He practised in Birmingham, but failing health compelled him to give up a large practice and go to Sandown, in the Isle of Wight. There he was appointed Medical Officer of Health, which post he held from 1874 until his death, which occurred in August, 1902. He had nine children, of whom eight are still living. His eldest son is Dr. James Neal of Birmingham. Dr. Neal was a Fellow of this Society for over forty years, having been elected in 1859.

The last on my list is Henry Oldham. Probably few, if any, in this room had the privilege of knowing him well; and most of us—for I include myself—never had the pleasure of seeing him. The fact is, he outlived most of

his contemporaries, for he was born in 1815, and died at the age of eighty-seven, within a short time of his eighty-eighth birthday.

He was the third son of Mr. Adam Oldham, of Tooting, in Surrey. He received his medical education at Guy's Hospital, and in 1849 he was appointed Physician-Accoucheur and Lecturer on Midwifery and Diseases of Women at Guy's. He held this post for twenty years, and on his resignation he was appointed Consulting Obstetric Physician to the Hospital, which post he retained up to his death.

Oldham was junior to Dr. Lever, and it was said of them that Oldham was *suaviter in modo* and Lever *fortiter in re.* Without exception, all who had the privilege of listening to Oldham give their testimony to the fact that he was one of the very best lecturers that Guy's ever had. For example, my colleague, Dr. Pye Smith, tells me he was the best lecturer he ever heard. His style was dramatic, but, his matter being excellent, this histrionic ability served not only to attract the students to his lectures, but to so impress upon their minds what he wished to teach them, that they remembered it far better, and for a much longer time, than similar facts conveyed in a less dramatic style. Dr. Constantine Holman writes to me that "Oldham was above middle height, handsome, with a very good profile. His hands were long, thin, and supple, but powerful. They looked built for midwifery. As a lecturer he was fluent, with strong powers of description, making free use of models from the museum, and making diagrams with chalk on a blackboard."

In 1850 Alfred Poland, one of the surgeons at Guy's, operated on a case of Oldham's, doing a Cæsarean section. Holman was clerk to the case and saw the operation. Oldham ruptured the membranes as soon as they bulged through the uterine wound, and seized and extracted the child. Both mother and child did well. In 1851 Lever's health broke down, and Dr. Holman was appointed to

take charge of his private practice and of his hospital work. He speaks very gratefully of the kindness and help he received at this time from Dr. Oldham, who, he says, was a great believer in drugs in uterine therapeutics, especially in perchloride of mercury in cases of uterine hypertrophy.

In vol. i of our 'Transactions' is a list of the first officers who were elected at the Inaugural Meeting, December 16th, 1858. The first Honorary President was Sir Charles Locock, and the first President Edward Rigby. There were ten Vice-Presidents, of whom Oldham was one. Two only out of this first list of officers are still living, viz. Dr. Robert Barnes and Dr. C. H. F. Routh.

In the first volume of our 'Transactions' is a very interesting case by Oldham of retroflexion of a gravid uterus.

In the second volume we find in the list of officers that Oldham was appointed Treasurer, Dr. Tyler Smith being the President.

Oldham held the appointment of Treasurer until 1863, when he became President of the Society in succession to Dr. Tyler Smith, being succeeded as Treasurer by Dr. Robert Barnes.

Oldham, therefore, was the third President of this Society, and a very able President he made, as is shown not only by the work done, but also by Dr. Holman and others, who are able to testify to it personally.

In the third volume of our 'Transactions' first appear the names of trustees. Three were appointed, namely, W. Tyler Smith, Upper Grosvenor Street; Henry Oldham, Finsbury Square; and George Thompson Gream, Upper Brook Street. Oldham remained a trustee until his death, having held the post for a period of nearly forty years. I may here mention that Dr. Chamyneys has been elected to fill the vacancy, and I hope he may be spared to hold it for a similar period of time. Oldham was not a prolific writer so far as I have been able to discover; the last address which he delivered as President of the

Society was his last contribution to the 'Transactions.' He contributed a few papers to the 'Guy's Hospital Reports,' and he invented a perforator, which still holds the field as the best, though happily the operation of perforation is one now seldom required.

Oldham married in 1838, and he leaves two daughters married, and one son, Colonel Sir Henry Oldham, Lieutenant of the Hon. Corps of Gentlemen at Arms.

Colonel Sir Henry Oldham tells me that his father had a very simple way of living. For the last fifteen or sixteen years he never ate meat, fish, or fowl. His food consisted of one egg, a milk pudding, bread and butter, and tea, coffee, and cocoa, and one cigar after breakfast was his great enjoyment until about six months ago, when he gave up tobacco. Up to the last he was a great walker, and when unable to go out of the house he wandered backwards and forwards on the balcony for two half-hours in the day. He hated drugs, except quinine.

He was the dearest and best of fathers, and during his last illness not a word of complaint ever crossed his lips. He always enjoyed good health, which he attributed to his system of diet. He did not know what toothache was. He made a fortune of upwards of a quarter of a million by means of judicious investments.

My friend, teacher, and colleague Sir Samuel Wilks has kindly given me some interesting details about the late Dr. Oldham, whom he remembers well:—

"When Dr. Ashwell retired from Guy's there was no assistant to take his place. Two men applied for the post, namely, Dr. Lever, who had already shown himself to be a highly practical obstetrician, and Dr. Oldham, who had been studying embryology by means of coloured injections and the microscope, which was then coming into use. His specimens of the development of the chick in the egg were on the shelves of the Guy's museum.

The Treasurer of Guy's, recognising the merits of both these candidates, appointed them both."

Sir Samuel writes: "Dr. Oldham made a most ex-

cellent lecturer, his manner was impressive and his style good; he was also a tall, handsome man, with a striking presence, so that every word he uttered carried weight. I remember once Addison said to me as Oldham passed down the colonnade, 'What a fine handsome man Oldham is!' He commenced practice in the City as Lever did in the Borough, but it was more select. There was not a woman in the south of London who had not consulted Lever, and his chariot with red wheels, known as Lever's fire engine, was met every afternoon in the streets rattling along at a tremendous pace. Oldham devoted himself more to the scientific part of his speciality, and became examiner at the College of Surgeons, besides holding other similar appointments."

Sir Samuel mentions also that it was Oldham who started the doctrine of "missed" labour. That is when the child dies *in utero*, and labour fails to come on, though doubt has been thrown upon the interpretation of Oldham, and other alleged cases by Galabin and others, who suggest that they were really cases of extra-uterine fœtation.

Oldham was consulted by a young person on account of the absence of menstruation, and on examination he found the uterus was altogether deficient, and that the ovaries were placed in the groin. On each side he felt a round hard body, and on questioning her she said that every month they became painful and increased in size, accompanied by some of the other usual molimina. Oldham examined her during one of these supposed periods, and he sent notes of the case to be read at the Royal Society. It was reported in the journals, and was quoted in the text-books, Tyler Smith regarding it as a proof that ovulation was closely connected with the catamenial period.

The patient was said to be well grown, the mammæ developed, and to have in all respects true womanly characters. She afterwards married, then fell into bad health, and died in about two years of consumption. A

post-mortem examination was made, and these inguinal bodies were taken to Wilks for examination, and he found that they were testicles. They were well formed though small, and the long threads of tubuli seminiferi were easily drawn out. Sir Samuel tells me he gave them to Oldham for further examination. He goes on to say that Oldham's lectures were remarkable. Wilks cannot forget what great stress he laid upon the maxim "Meddlesome midwifery is bad." The most praiseworthy thing for the practitioner to do was to sit perhaps for a whole day by the bedside of a woman in labour, and render her no assistance. Wilks writes, "I remember well the first time when I saw a woman in labour; there were sundry remarks amongst the attendants, all purporting to show that they considered me quite ignorant of what was going on. This pricked my conscience, although I did not do like a fellow-student, who in his first case was so disconcerted by a burst of liquor amnii over him that he rushed off to the hospital for assistance, saying he had ruptured the woman's bladder!"

Sir Samuel Wilks thinks that it is very interesting to know that Oldham lived to such a ripe old age, and that he strictly followed the rules of Cornaro in taking a very small amount of food, and this of the simplest character.

I have given you a fairly complete account of Dr. Oldham because of his eminence as an obstetrician, because of his remarkable personality, and because he was one of the very few now left of the founders of the Obstetrical Society of London.

My task is finished. I now lay down the insignia of office. The work of the past two years has been one of real pleasure to me. To dip deeply into any branch of science has a pleasure of its own. Physical exercise, especially in the way of sport, is a real enjoyment to me; but I know of no sport with such an absorbing and exciting interest as the pursuit of the microbe.

When one has one's hands immersed in a germicidal solution one can see with the mind's eye these microbes,

short in length but long in name, dying in their thousands and perhaps millions. You can, in imagination at least, see them smile "a sickly kind of smile, then curl up on the floor, but the subsequent proceedings interest them no more."

To see patients cured by operation of some condition that one knows would, unless treated, prove fatal, is a real joy, and this is practically now an everyday occurrence, thanks to the almost perfect way in which we can overcome and circumvent this ever present deadly microbe.

The spirit of this Society is, and I hope ever will be, the desire to find out the truth about things, to get rid of all false doctrine, and to establish scientific laws.

Much as we know compared with the knowledge of those who lived in the days before Pasteur and Lister, yet there is still a great deal to learn, and sometimes I wish I was just beginning all over again, but starting now at the point to which we have attained.

The surgeon is having a long and successful innings, but I seem to see the dawn of a coming day when it will be the physician's turn, and the knife will be relegated to the museum of obsolete antiquities. Why cancer cannot be dispersed by drugs just as efficiently as a gumma by mercury, I see, at all events, no *a priori* reason. I should like to live to see it done.

My feeling of regret in vacating this chair is counterbalanced by the knowledge that it will be filled by so able an obstetrician as Dr. Malins of Birmingham, because I know he will maintain the high aims of our Society, and carry on its work with that conspicuous ability which characterises all he has done.

It only remains for me to say that my term of office has had its labours lightened by the support of most able officers. Miss Hannam is known to all of you as the most able and accomplished Secretary and Librarian that this Society has ever had.

Of the two Honorary Secretaries, the senior is the one

that has most to do with the President. For the first twelve months Dr. Herbert Spencer did the work, and for the last twelve months Dr. Amand Routh has done it. Both of these gentlemen devoted themselves thoroughly to the task, and promoted the best interests of the Society. To both I beg to tender my best thanks, not only for the help they gave to me, but for the kindly way in which it was done.

On the motion of Mrs. Scharlieb, seconded by Mr. Doran, a vote of thanks to the President for his address was passed by acclamation.

MARCH 4TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—54 Fellows and 2 visitors.

Books were presented by Dr. Blacker and Dr. Frommel, the Edinburgh Obstetrical Society, the Staffs of Guy's and St. Bartholomew's Hospitals, and the Société de Médecine de Rouen.

Louisa B. Aldrich-Blake, M.D.; W. Burslem Rotheroe, L.R.C.S. & P.Edin.; Arthur Lionel Hall Smith, L.R.C.P.; and Theodore Henry Ionides, M.B., B.S.Lond., were admitted Fellows of the Society.

Alfred Austin Lendon, M.D.Lond. (Adelaide); Kathleen Bonnar, L.R.C.P. & S.E. (Calcutta); Temulji Bhicaji Nariman, L.M. & F.Bomb.Univ. (Bombay); William Ernest Heilbron, M.B., B.Ch. (Bradford), were declared admitted.

The following candidates were proposed for election:—John Cyril Holdich Leicester, M.D., B.S.Lond., F.R.C.S.Eng., Captain I.M.S.; Nathaniel Henry Turner, L.R.C.P.Lond.; Florence Elizabeth Willey, M.B., B.S.Lond.

The following were elected Fellows of the Society:—Louisa Garrett Anderson, M.B., B.S.Lond.; Maud Mary Chadburn, M.D.Lond., B.S.; John Hazelwood Clayton, M.B.Lond.; Alice Mary Corthon, M.B., B.S.Lond.; William Turberville Farncombe, M.D.Brux.; John Furneaux Jordan, M.B., F.R.C.S.Eng.; Herbert Malins, B.A.Oxon.,

M.B.Edin.; Alex. Wathen Nuthall, F.R.C.S.Eng.; William Alexander Potts, B.A.Cantab., M.D.Edin.; Ernest Smallwood Savage, M.B.Oxon., F.R.C.S.Eng.; William Mott Whitehouse, M.D.Dur.

A UTERUS REMOVED BY VAGINAL HYSTERECTOMY FOURTEEN DAYS AFTER THE OPERATION OF CURETTING AND STEAMING HAD BEEN PERFORMED.

Shown by Dr. G. F. Blacker.

The specimen—a uterus removed by vaginal hysterectomy fourteen days after the operation of curettage and steaming the cavity had been performed—illustrates very well the effect of superheated steam upon the mucous membrane and muscular tissue.

The history of the case is shortly as follows:

Miss H—, aged 47, came to me on September 10th, 1902, complaining of increased loss at the monthly periods, and a slight amount of intermenstrual hæmorrhage.

This condition had been present for three to four months, and during this time the patient had been unwell every three weeks, the flow lasting a variable time from three to ten days, and as many as four dozen diapers being used at each period. Between the periods a slight show of blood occurred from time to time; there was, however, no continuous vaginal discharge either of mucus, pus, or blood, and the intermenstrual loss had never been more than slight in amount. For the last two months some pain had been present, mainly in the lower part of the abdomen. This pain, which never entirely ceased, was felt chiefly during the first two days of the period, and again during the two days after the cessation of the periods.

The general health had remained good, the appetite was

fair, there had been no appreciable loss of flesh, and the bowels acted regularly.

On vaginal examination the neck of the uterus was found to be healthy, the body a little enlarged, regular in outline, and freely movable, and the appendages apparently normal. No polypus could be detected, and the cervical canal was not unduly patulous. Exploration of the interior of the uterus was recommended, and, if found necessary, the performance of curettage. The patient was unwilling to consent to this at that time, and she was accordingly ordered a mixture of ergot and hydrastis canadensis. I did not see her again until December 4th, when she returned and told me that the last period had been very profuse indeed, the medicine having had no appreciable effect in lessening the amount lost.

The intermenstrual discharge of blood continued slight in amount, but was still as frequent as before, and the pain had become more marked and had spread to the right side of the abdomen.

On December 10th the cervix was dilated with Hegar's dilators sufficiently to admit the finger, and the interior of the uterus explored. Nothing abnormal could be detected. The whole surface of the mucous membrane was carefully curetted and then steamed with superheated steam for ninety seconds. The temperature of the steam in the boiler was 120° C. when the steaming was commenced, and 110° C. at the end of the ninety seconds. The after-progress of the case was uneventful. About the end of the first week there was a good deal of thin, blood-stained, watery discharge, and some small sloughs came away.

The scrapings, which were very small in amount, were sent to the Clinical Research Association, and the section was examined by Mr. Targett, Mr. T. W. P. Lawrence, and myself. The report sent to us, signed by Mr. Targett, was as follows :—" There is very little tissue in these curettings, and it consists of large glandular tubules like those of the cervical canal. In addition to the regular columnar

epithelium there are many solid masses of cells, which are undoubtedly malignant. They appear to take origin from the lining of the glandular tubules, as in carcinoma." Although neither Mr. Lawrence nor I was so certain of the malignant character of these masses of cells, yet in view of the doubtful nature of the case, and the fact that both the patient's father and mother had died of carcinoma, I decided to remove the uterus. This was accordingly done on December 24th, and the patient made a good recovery, and is at present (February 27th) very well.

The description of the removed uterus is as follows :

Its length from the external os to the fundus is 9·3 cm., its breadth 5·6 cm., and its antero-posterior measurement 3·8 cm. Externally it presents a normal appearance. On making a sagittal section of the whole uterus the cavity is seen to present two distinct portions—an upper part 1·8 cm. in length, which maintains its normal shape, and a lower part 6·2 cm. in length, in which the normal appearance has been entirely lost. In the upper part of the uterine cavity the surface is smooth, and for the inner 3 mm. of a reddish-grey appearance. There is no trace of mucous membrane to be seen on naked-eye examination. In the lower part of the uterine cavity, over an area measuring 6·2 cm. by 1·1 cm., there has been an extensive destruction of the tissue, including not only the mucous membrane, but also part of the muscular tissue of the wall of the uterus. The surface is rough and granular in appearance, and has some fibrin adhering to it in places, but there is no evidence of new growth. The destruction of the tissue where it is most marked has extended to a depth of about 5 mm. from the inner surface of the uterus. This area of destruction includes not only the lower part of the body of the uterus, but also the upper part of the cervical canal. The external os, except in so far as it has been damaged by the dilatation, is normal.

On microscopical examination the following appearances were seen :

1. Section through the mucous membrane and uterine wall at the upper part of the cavity (α in Fig. 1). The free surface of the section is here composed of a layer of tissue which appears to be structureless and does not stain with hæmatoxylin; it is infiltrated with a large number of leucocytes, and there are a few spaces in it, devoid of any lining of epithelium, which appear to represent the remains

Fig. 1.

Sagittal section of uterus.

of the uterine glands. There is no trace of any epithelium upon the free surface. This layer of tissue appears to be the remains of the mucous membrane in a condition of necrosis. The muscular tissue beneath it stains somewhat imperfectly in its superficial part, but the deeper layers present a normal appearance.

2. Section through the uterine wall about the middle of the uterus (at β, Fig. 1). Entire destruction of the mucous

membrane and of the superficial part of the muscular tissue has occurred. The free surface of the section presents a more or less ragged edge, and is composed of muscular and fibrous tissue. For a considerable depth from the surface the tissues are infiltrated with leucocytes, stain badly with hæmatoxylin, and present appearances indicating the presence of necrotic changes. Large vessels can be seen to be present almost at the free edge of the section. The deeper layers of muscle present a normal appearance.

3. Section through the upper part of the cervical canal (at γ, Fig. 1). This section presents appearances practically identical with those seen in Section No. 1, viz. a complete destruction of the mucous membrane and an entire absence of glands and lining epithelium.

From the naked-eye appearances and the examination of the microscopical specimens it is evident that not only the whole of the mucous membrane of the body of the uterus and of the cervical canal has been destroyed by the action of the steam, but that a considerable part of the muscular tissue has also been destroyed in that part of the cavity of the uterus occupied by the intra-uterine metal cannula. In order to avoid any risk of perforating the uterus, the end of the cannula is not introduced up to the fundus, and the large cavity present in the specimen, extending up to a point 1·8 cm. from the upper limit of the body of the uterus, no doubt represents the part of the uterus exposed to the cauterising effect of the hot intra-uterine metal tube; and the extensive destruction of tissue is due not to the action of the steam alone, but also to the active cauterising effect of the tube. The specimen illustrates the fact that by the use of superheated steam it is possible to produce complete necrosis of the uterine mucous membrane, and that where the action of the steam is continued for so long a period as ninety seconds the destructive action of the heated metal tube must also be taken into account. By the use of this method, therefore, complete destruction of the uterine mucous membrane can be obtained with certainty. From the entire absence of any

remains of the glandular or lining epithelium in the specimen it is evident that no regeneration of a perfect mucous membrane could have taken place.

The further examination of the specimen entirely fails to show any evidence of the presence of a carcinomatous growth. It is, however, possible that the destroyed tissues may have been the seat of early carcinomatous degeneration.

In a paper published by me upon "Vaporisation of the Uterus,"* the results produced upon the uterine tissue are discussed in detail, and it is shown that all degrees may be met with, varying from slight destruction of portions of the superficial layers of the epithelium to complete destruction of the whole of the mucous membrane and the superficial layers of the muscular tissues.

In cases where the entire mucous membrane has been destroyed, its place is taken by a layer of connective tissue containing no glands and covered by a single layer of cubical epithelium.

Report of the Pathological Committee on Dr. Blacker's Specimen of Uterus removed by Vaginal Hysterectomy.

We, the undersigned, have examined sections of the curettings and of the uterine wall after vaporisation, from Dr. Blacker's case. The sections from the curettings show a glandular structure like that of the endometrium, with some intra-glandular cell-proliferation; but it is impossible to state definitely that it is of an innocent nature. The sections from the uterus after vaporisation show no evidence of malignant disease.

G. F. Blacker.
J. S. Fairbairn.
Cuthbert Lockyer.
Corrie Keep.
C. Hubert Roberts.
Alban Doran, *Chairman.*

March 19th, 1903.

* 'Journal Obstet. and Gynæc.,' vol. i, p. 494.

Dr. Herbert Spencer said the specimen showed one of the dangers of steaming the uterus. He had employed steam in a good many cases to check bleeding uncontrollable by other means. In some cases it was very successful, but he was less favourable to it than he used to be, owing to its uncertain effect upon the cervix. In two of his cases it had produced stenosis of the cervix without destroying the mucous membrane of the body of the uterus, so that considerable dysmenorrhœa and pain ensued; and in one case the extensive cellulitis it produced rendered a subsequent hysterectomy very difficult. He did not know of any specimen showing the destructive effect in the cervix so clearly as Dr. Blacker's, and he thought this method of treatment should not be employed for a longer period than half a minute in any case where it was not possible to explore the uterine cavity thoroughly, especially in the case of fibroids, for fear of producing stenosis, which might give rise to severe pain and other troubles.

A CASE OF ADENOMA MALIGNUM OF THE BODY OF THE UTERUS.

Shown by Dr. C. Hubert Roberts.

The following case is of some interest owing to the somewhat long duration of the disease and its rather unusual microscopical appearances.

A. A—, aged 47, had had two children, the last thirty-three years ago, but no miscarriage. She was admitted to the Samaritan Hospital on April 10th, 1902, having been an out-patient under Mr. Corrie Keep, who kindly sent her to my wards.

She complained mostly of red discharge, from which she had suffered for the last four or five months. The bleeding had been of an irregular type. The change of life had occurred four years previously to this. There was no pain or loss of flesh. There had been no watery discharge, nor had the red discharge ever been foul. Her general health was very good as a rule, though she had not a good

colour and was stout. There had been no rectal or vesical trouble.

Mr. Keep wrote to me March 19th, 1902, that he found the uterus knobby and without any appearance of malignant disease about the cervix.

When I examined her on April 11th (the day after her admission) I found the cervix small and senile. It was quite smooth, and its texture seemed healthy. There was nothing suggestive of cancer locally. The uterus itself was a little enlarged and irregular, especially near the right cornu. It was quite mobile. The sound passed for 2¾ inches, but caused bleeding.

I took the case to be one of endometritis associated with fibroids in a senile uterus, and on April 14th the patient was anæsthetised and the cervix dilated in the usual way. I did not carry the dilatation to the extent of being able to pass my finger into the cavity of the uterus.

The curette removed much soft villous-looking material, but there was no mass suggestive of cancerous growth. There was free hæmorrhage at the time of operation. Under the anæsthetic the irregular shape of the uterus was quite evident, especially on the right and upper margins. No infiltration of the pelvic cellular tissues could be detected.

Her recovery from the operation was quite uneventful, and she left the hospital April 28th, 1902.

My colleague, Dr. Lockyer, kindly examined the materials removed, and reported to me on April 25th that the growth was innocent. With this I quite agreed on seeing the sections, as there was nothing more than the condition seen in an ordinary case of glandular endometritis. The cells lining the gland acini were quite regular, and no atypical proliferation had taken place. No muscular tissue had apparently been removed by the curette, so that evidence as to its invasion by the growth was wanting. Considering this and the clinical history, I felt satisfied that the case was probably not one of

malignant disease of the body, and I hoped that the curetting would cure her.

I heard nothing further of the case till December 29th, 1903 (*i. e.* eight months after the first operation), when she was readmitted into the Hospital. She informed us that since the operation in April she had been somewhat better, but that, although there had been no severe floodings, there had been slight bleeding of an irregular type, which had at times lasted for a fortnight. Then she would be free again for a time; then the loss would begin again. Often it was only "just a stain." She had no pain whatever, nor loss of flesh. The discharge had never been offensive. Her general condition was good.

In consultation with Mr. Meredith and Mr. Corrie Keep, the question of further operation was discussed, especially as the uterus appeared to have increased in size. I proposed, therefore, to examine the patient again under an anæsthetic, and, if possible, digitally to explore the uterine cavity with regard to the possibility of the presence of malignant growth. On the other hand, it was possible that the case was one of recurrent endometritis associated with fibroids which were continuing to grow.

On January 5th, 1903, under anæsthesia, I dilated the cervix sufficiently to pass the finger into the uterine cavity, which was dilated and filled with soft growth, which easily broke down, and even gentle manipulations gave rise to severe hæmorrhage. There was no definite projecting growth, and the material that came away was almost villous in character. The uterus measured three and a half inches, and had increased considerably in size since the previous examination in April, especially on the right upper border, where a considerable mass could be felt. There was little doubt as to the malignant character of the growth, and it was decided to remove the uterus.

This was done on January 14th, 1903. It was a difficult vaginal hysterectomy owing to the smallness of the vagina and the size of the uterus, and I had proposed, if necessary, to open the abdomen after freeing the cervix by the vagina.

The broad ligaments were secured by ligature, the left side being fairly easy to reach and control, but the right side gave much trouble, as the uterus would not come down owing to a fair-sized fibroid which grew from the neighbourhood of the right cornu. This partly separated and displaced the layers of the right broad ligament. After freeing the left side the uterus was turned out sideways into the vagina; this exposed the upper border of the right broad ligament and tube, and enabled me to ligature the right side from above downwards. As the right ovary was enlarged and cystic I removed this also. The left ovary was small, and seemed healthy. I could not detect any infection or thickening of the parametrium; and the right ovary, though enlarged, did not appear to contain any growth. The opening into the peritoneum was lightly plugged with iodoform gauze and thus drained by the vagina. There was a little shock after the operation, and the hæmorrhage was slight. The patient made a good recovery, and was discharged from the hospital on January 31st, exactly three weeks after the operation. She remains very well up to the present date (March 4th, 1903).

The specimen is one of some interest in that it does not quite resemble an ordinary carcinoma of the body of the uterus either in its clinical history or its pathological appearances, while microscopically it resembles those growths described as adenoma malignum. The uterus (shown) measures $3\frac{3}{4}$ inches in length and $4\frac{1}{4}$ inches across at the fundus, which is considerably enlarged and distorted by the presence of several fibroids, the largest of which, of the size of a golf-ball, projects from the right cornu. It was this tumour which gave rise to difficulty in bringing the uterus down at the time of operation. There are several smaller fibroids at the upper and posterior borders of the fundus. No growth involves any of the fibroids.

On opening the uterine cavity anteriorly, the cavity is seen everywhere to be superficially ulcerated and occupied by soft growth. The growth appears to affect the whole endometrium, but is nowhere of any great thickness, and

much of the uterine contents must have been removed at the exploratory operation on April 14th, a few days previously.

The chief part of the growth is in the region of the left cornu near the orifice of the left Fallopian tube. The cervix is healthy up to the region of the os internum. Sections of the uterine wall show the growth macroscopically to be of quite a superficial character. None of the fibroid tumours are affected by the growth. Microscopically the growth is malignant in character, but it is not quite like an ordinary columnar-celled carcinoma of the body, and for this reason I think the specimen to be of some interest, and I should like the opinion of Fellows of this Society as to its exact nature. Superficially the growth is distinctly villous in character and very friable, extending in long delicate processes towards the uterine cavity. The processes are covered in most places by a regular layer of columnar cells, but here and there the cells are undergoing atypical proliferation. In the deep recesses between the villous processes the growth became more complicated, but many acini occur in which the lining epithelium is fairly regular in character.

The most remarkable parts of the growth are seen actually in the deeper portions of the uterine wall, occurring in isolated areas of gland-like tissue in the muscular structures. The epithelium lining these spaces is convoluted, and consists generally of a single layer of columnar epithelium not unlike that of the ordinary uterine glands. In places, however, the epithelium is thick, and is undergoing an active proliferation suggestive of a carcinomatous process.

The presence of gland-like tissue in a state of proliferation occurring deep in the muscular wall of the uterus must, however, render the growth a malignant one; and though it is a carcinoma to all intents and purposes, the author proposes to class it with those tumours described as adenoma malignum. The superficial character of the

growth and its friable villous structure, added to the fact that at the previous microscopical examination of the curettings in April, 1902, the growth was taken to be an adenoma, are evidences that it is not quite of the type of an ordinary columnar-celled carcinoma.

Somewhat similar cases have been shown before the Society by Dr. McCann, 'Trans. Obstet. Soc.,' vol. xl, 1898, p. 2; Dr. Eden, ibid., vol. xlii, 1900, p. 2; and by myself, ibid., vol. xlii, 1900, p. 267. See also 'Outlines of Gynæcological Pathology' (author), pp. 239 and 256, with drawings, where the subject is more fully discussed.

The case also illustrates the importance of investigating all cases of uterine hæmorrhage occurring after the climacteric.

Report of the Pathological Committee on Dr. Hubert Roberts' specimen of Adenoma Malignum of Uterus.

We, the undersigned, are of the opinion that the growth is malignant, of glandular type, and that it can be well described as an adenoma malignum.

G. F. Blacker.
John S. Fairbairn.
Cuthbert Lockyer.
Corrie Keep.
G. Bellingham Smith.
C. Hubert Roberts.
Alban Doran, *Chairman.*

March 17*th*, 1903.

MICROSCOPICAL SECTIONS OF A CASE OF TUBERCULOSIS OF THE OVARY AND FALLOPIAN TUBE.

Shown by Dr. C. Hubert Roberts.

Owing to the rarity of this condition I venture to bring the following case before the notice of the Society, together with microscopical slides of the condition found at the time of operation.

I am indebted to Dr. W. S. A. Griffith for being permitted to publish the notes of the case. I assisted Dr. Griffith at the operation, and as the case was one of tuberculosis of the ovary and Fallopian tube I thought the sections shown to-night might be of some interest.

The patient, Mrs. T—, aged 32, came under Dr. Griffith's care in December, 1902, for an acute attack of pain in the abdomen, accompanied with fever and rapid wasting.

She had been married twelve years, and had had three children. The first confinement was followed by some septic trouble; the second was normal; the third, which took place at the eighth month, was in 1899 in South Africa, during the recent Boer War, when she had a hard time, but no complications. She endeavoured to get into Kimberley for her confinement, but was unable to do so. Since 1899 she has gradually had increasing ill-health, accompanied with attacks of pelvic pain and menorrhagia. Dr. Griffith saw her several times during 1902, but it was not till December that she became rapidly worse; and a definite mass was found in the abdomen, mostly on the left side, reaching one third of the way up to the navel. This mass was partly elastic, and intimately adherent to the uterus. A similar, but smaller mass existed on the right side. The whole pelvis, by vaginal examination, was filled with dense inflammatory deposit, in which the uterus was embedded. The patient was extremely ill,

and the temperature of a hectic type, and accompanied with great wasting. Since December 2nd, 1902, up to January 3rd, 1903, the condition of the patient had become rapidly worse, and she suffered great pain.

It was thought that the mass on the left side was probably a pyosalpinx, and that a similar condition existed on the right.

Operation was decided upon, but it was felt that in her condition the risks were great.

On January 3rd, 1903, the abdomen was opened and the swelling explored. Dense adhesions roofed in the pelvis, and the recognition of the parts was a very difficult matter owing to extensive matting of the enlarged tubes and ovaries, and for a time it was impossible to define the position of the fundus uteri. The chief part of the swelling in the abdomen was a large banana-shaped tube four to five inches long, to which was adherent an enlarged necrotic ovary of the size of one's fist. Both ovary and tube were adherent to the back of the uterus and the neighbouring intestines. The tube was gradually separated, but it was so rotten that it tore in several places, and the wound area was flooded with cheesy, fœtid pus. The enlarged ovary was still more necrotic, and contained many foci of suppuration. The left tube was gradually freed, ligatured, and removed, together with most of the left ovary, but portions of the latter had to be left behind owing to adhesion to intestine. The right ovary and tube were in a similar condition, but less advanced. The right tube was removed, but it was impossible to take away the ovary, which was densely embedded in adhesions deep in Douglas's pouch. The uterus was not markedly enlarged, but adherent to everything in its immediate neighbourhood.

The operation was a very severe one, and there was considerable shock, from which the patient never rallied, and she died of exhaustion within thirty-six hours. Her condition was very serious even before operation, which gave her the only chance of recovery.

The specimens removed have not been preserved, as they showed little beyond an advanced condition of pyosalpinx associated with enlargement and necrosis of the ovary, especially on the left side.

The left tube was much the longer, and, as previously stated, was four to five inches in length, and was dilated, especially at its distal end, to the size of a hen's egg. The shape of the tube was like that of a banana, and not the convoluted retort-shaped swelling commonly seen in pyosalpinx. The left tube contained fœtid cheesy pus. The tube walls were very thick, and the pus was contained in cheesy loculi in its interior. It was thought at the time of operation that miliary tuberculous nodules could be detected on the peritoneal surface. The left ovary, of the size of a fist, was intimately adherent to the tube and surrounding structures, and was in a state of suppurative necrosis. It appeared in parts to be almost cystic. The right tube was similarly enlarged, but to a less degree, being of about the size of one's finger. It also exhibited the banana-like shape. It contained cheesy pus. On its surface a few (? tuberculous) nodules could be detected.

Dr. Griffith kindly allowed me to examine the tubes and ovary, sections of which I bring before the Society to-night.

The case is an evident one of tuberculosis affecting the ovaries and Fallopian tubes. I cannot say if the disease originated in the tubes; from their microscopical appearances I think not, and that the disease must be secondary probably to peritoneal infection.

Since the operation we have learnt that the patient had been under treatment by Mr. D'Arcy Power for a condition of the wrist and arm which he considered to be tuberculous.

Careful sections of the tube near its uterine end show well-marked tuberculous lesions, but the stress of the disease is on the periphery of the tube, the lumen and plicæ being practically normal.

The tube wall is enormously thickened, and scattered in

its outer coats are several tuberculous nodules containing epithelioid cells and giant-cell systems. The centres of many of these nodules are in a state of caseous degeneration. The giant-cells are very well marked, and often contain a large number of nuclei arranged around the periphery of the cells. There is also much small-celled infiltration, especially in the outer wall of the tube and in the region of the tubercle nodules. Sections of the thickened tube wall in other parts show very little except advanced inflammatory conditions, and tubercle nodules are few and far between and difficult to demonstrate.

The sections have not been stained for tubercle bacilli. It should be remembered that in tubes where tubercle is suspected great care should be taken to carefully examine the tissues (as in this case) near the uterine end of the tube. If this is not done tubercle is easily overlooked. Mr. Targett drew attention to this in the 'Obstet. Trans. Lond.,' vol. xli, 1899, p. 163. The banana shape of the tubes in the case reported above is also strongly in favour of their tubercular nature (see also Roberts's 'Outlines of Gyn. Path.' p. 141), as opposed to the convoluted, retort-shaped tubes found in ordinary pyosalpinx.

The ovary also shows definite evidences of tubercle, but in a less marked form than the Fallopian tubes; the whole of the ovarian tissue is also in a state of necrosis. The surface of the ovary is covered with granulation tissue, and amid this areas of caseation are common.

Giant-cells are not frequent, but epithelioid cells and small-celled infiltration areas are common. In many places the caseous areas appear to be breaking down into small abscess cavities.

The case is of some interest, as tuberculosis of the Fallopian tubes and ovaries is not of very common occurrence. The origin of the infection in this case is uncertain, but it was probably secondary, as the mucosa of the tube is little affected. The banana-like shape of the tubes in tuberculosis is fairly common in such cases.

As to the best method of treating a case of this kind,

of course abdominal section should yield the best results, as in many cases, at all events in primary infection, the whole of the disease may be removed and the patient cured. In more advanced conditions, or in case of secondary infection, as in the present case, the operation is a severe one, and even if the tubes be removed other tuberculous foci may still exist in other parts. In the case reported above there were probably other lesions, *e. g.* the arm and wrist.

Since this the author has had a similar case under his care of a young lady aged 21, who had a large mass in the abdomen nearly halfway to the navel. The pelvis was filled with dense induration, but part of the vaginal mass appeared to be softer than the rest, as if an abscess was pointing in that region. Both Fallopian tubes were enormously enlarged, and that on the left side bulged into the vagina, as described above. The patient had a strong tubercular history, and was very ill and wasted. Her temperature varied from 101° to 103·8°, with profuse sweating. Dr. Griffith saw the case with me, and we decided to open the mass if possible by the vagina, and not by the abdomen. This was done, and I was easily able to reach a large pelvic abscess on the left side, apparently the dilated left tube. It was filled with fœtid pus. The patient improved for a week or so, but another mass formed on the right side, and could be felt two inches above the brim in the right iliac fossa. I decided to open this in a similar way by the vagina through the old wound, and succeeded in doing so with some difficulty, again letting out a large amount of fœtid pus. Since that time the patient has markedly improved; the temperature has fallen to 99°, and she has put on flesh rapidly.

I fear in this case if I had opened the abdomen the result would not have been so good, though I admit that tissues have been left behind which may at a later date give rise to fresh mischief.

I should like to ask the Fellows of this Society what they think is the best proceeding in such cases, for I am

convinced that although, surgically speaking, abdominal section is the better operation, still in bad cases the vaginal route gives a patient a chance of recovery, at all events for a time, where abdominal section might in the acute stages prove fatal. Even in the second case I quote it may be quite possible, when the patient is in a better general condition, to operate by the abdomen.

Dr. Walter Swayne said that three months ago he had to deal with a case which presented many features similar to those described by Dr. Roberts. The patient had a large mass in the pelvis and much distension of the abdomen, which contained fluid. On opening the abdomen the whole of the peritoneum was studded with what to the naked eye was apparently miliary tubercle. The appendages were embedded in exudation, which formed the mass felt in the pelvis, and the peritoneum was full of ascitic fluid; it was obvious that removal of the appendages was impossible, and the wound was closed after flushing the peritoneal cavity with a hot saturated solution of boracic acid. The patient made a good recovery, and at the end of a month had put on several pounds in weight.

KERATINISING CARCINOMA OF THE BODY OF THE UTERUS.

Shown by Dr. Lewers.

The patient from whom the specimen was removed was a single woman, aged 43. She had suffered from metrorrhagia for two years, and from some pain about the lower abdomen, which came on some time after the commencement of the bleeding.

The cervix was dilated, and a malignant growth found in the body of the uterus. There was a lump felt to the right of the uterus of the size of a Tangerine orange.

Abdominal panhysterectomy was performed on November 27th, 1902, in the London Hospital.

The lump to the right of the uterus proved to be the right ovary enlarged, partly by cystic change, and partly by a malignant growth secondary to that in the uterus. The ovary was not adherent, and there was no evidence of any other secondary deposit elsewhere. As regards the operation, the case illustrated the advantages of the abdominal operation, especially since the exact nature of the lump to the right was ascertained at the very beginning of the operation, instead of towards the end of it, as would have been the case if vaginal hysterectomy had been performed. The patient made a good recovery.

As regards the specimen, the growth was a columnar-celled carcinoma, but over a considerable extent it had become keratinised, so that in parts of the sections the appearances were very similar to those of squamous carcinoma of the cervix. (Sections of the growth in the uterus and in the ovary were shown under the microscope.)

Mrs. Boyd, in reference to the association in Dr. Lewers's cases of carcinoma of the body with carcinoma of the ovary, mentioned a similar case where she had removed by abdominal panhysterectomy a large uterus, the seat both of fibroids and cancer of the body, from a middle-aged woman. The right ovary contained a secondary growth, and was non-adherent and easily removed with the uterus. No other secondary growths were discoverable. The patient died some six months later with cerebral symptoms. There was no evidence of local recurrence or of involvement of abdominal glands.

Dr. Cullingworth said that Dr. Lewers's case and the one to which Mrs. Boyd had referred had a special interest for him at that moment, as he had that very morning operated upon the second case of the kind that he had met with within the last two years. Both cases had occurred in his private practice, and were, so far as he could remember, new in his experience. In both patients there was evidence of new growth in the lateral parts of the pelvis, for which abdominal section was performed, but in each case there was irregular uterine hæmorrhage of such character and extent as to make it seem desirable to dilate and curette the uterine cavity before opening the abdomen. In the case of the first patient, an ovarian cyst with some obviously malignant papilloma was removed, the scrapings from the uterus

being meanwhile sent for examination and report. The report being to the effect that the uterine disease was carcinoma, the uterus was removed by vaginal hysterectomy a fortnight after the original operation. There was found to be extensive carcinoma of the body of the uterus. The patient was at that moment, eighteen months after the operation, free from any sign of recurrence. In the case of the second patient, the preliminary curetting was so conclusive as to the existence of carcinoma of the body of the uterus that the microscopist's report was not waited for; and a week after the first operation, at which both ovaries were removed for soft, rapidly growing, and already degenerating cystic carcinoma, the uterus was removed by the combined abdominal and vaginal method. The only reason why the uterus was not removed in the first instance was that the patient, when the curetting had been done and the universally adherent tumours of the ovaries had been removed, showed signs of having had as long an operation as was compatible with her safety. Dr. Lewers had spoken of the ovarian disease being in his case secondary to the uterine. He (the speaker) would like to hear upon what evidence that opinion was based. In the earlier of his own cases, the reporter of the Clinical Research Association expressed the opinion that the ovarian disease was in that instance primary and the uterine secondary. In the second case, the one now under treatment, it seemed to him very difficult to say which was primary—the ovarian disease or the uterine. But the specimens were being examined, and he hoped to return to the subject later, when sufficient time had elapsed after to-day's operation for the two cases to be placed on record. In the meantime he intended to look up the literature of the subject

Dr. Russell Andrews said that Hitschmann, of Vienna, who had been studying the histology of carcinoma of the body of the uterus for some time, found that metaplasia, change from columnar to squamous epithelium, was comparatively common in this condition, Dr. Andrews had seen a good many sections showing this change, but none in which it was so marked as in Dr. Lewers's specimen.

In reply to Dr. Cullingworth, as to why the growth in the ovary was to be regarded as secondary, Dr. Lewers said he thought the size of the growth in the ovary was an important point. Judging from the symptoms, the uterine growth had in this case existed for about two years, and yet the ovary was only enlarged to the size of a Tangerine orange. When the malignant growth in the ovary was primary, the resulting tumour generally grew rapidly, and the course of the case was much more acute. In reply to Dr. Andrews, Dr. Lewers was surprised to hear that a German authority said squamous epithelium was to be found in every case of carcinoma of the body of the uterus. He had had a fairly large number of such cases examined as to

the microscopical appearances by others, and besides had examined the sections himself. But the specimen he showed this evening was the only one of primary carcinoma of the body in which squamous epithelium had been detected.

PARTIAL VESICULAR DEGENERATION OF THE PLACENTA.

Shown by Dr. Galabin.

Dr. Galabin showed a specimen of partial vesicular degeneration of the placenta in conjunction with a fœtus of five months, which lived up to the time of delivery. He saw the patient in consultation with Dr. Morgan Hearnden. She was 32 years old; had had four previous pregnancies —twins once. In the earlier months of the pregnancy she suffered from sickness. For three weeks she had appeared very ill, with weakness, cardiac symptoms, and rapid pulse, and the abdomen had increased rapidly in size. The pulse was 120.

The abdomen was found nearly as large as at full term of pregnancy. The uterus contracted as usual, and there was no rigidity nor evident tension. Contents seemed mainly fluid; but signs of a living fœtus were made out with some difficulty. The finger was passed in through the cervix, and felt the membranes and fœtus. Patient looked ill, but not pallid enough to suggest hæmorrhage.

Dr. Galabin thought the case was probably one of hydrops amnii. He advised induction of labour, and tried on the spot to separate the membranes around the os. The result was that labour pains came on the same night. Next morning Dr. Hearnden ruptured the membranes, and an enormous quantity of blood and clots was expelled. The patient became alarmingly collapsed, but eventually

rallied. A number of vesicles came away with the blood. The placenta was cleared out of the uterus by hand. The placenta showed scattered vesicles pretty uniformly throughout, but a large proportion of chorionic villi remained normal. Its uterine surface was completely broken up, no continuous decidua serotina being visible. The larger vesicles, which escaped separately, were mostly about half an inch in diameter.

The patient recovered well, and has had no return of hæmorrhage, nor indicated suspicion of deciduoma malignum. It was remarkable that not a drop of blood escaped externally, though the patient had what was virtually a concealed accidental hæmorrhage going on for three weeks.

Report of the Pathological Committee on Dr. Galabin's Specimen of Hydatidiform Degeneration of the Placenta and on the Fœtus.

We, the undersigned, have examined this specimen, and find evidence of diffuse vesicular degeneration of the whole placenta, but definite cysts are not numerous.

Microscopically many of the villi have undergone both fibrous and myxomatous changes.

Examination of the thyroid shows the presence of glandular tissue; there is no evidence of morbid change.

John S. Fairbairn.
Alfred L. Galabin.
Cuthbert Lockyer.
Corrie Keep.
C. Hubert Roberts.
G. Bellingham Smith.
Alban Doran, *Chairman.*

Mr. Bland-Sutton drew attention to the importance from a pathological standpoint of Dr. Galabin's specimen in its bearing on the interesting suggestion recently made by Dr. Berry Hart, that myxomatous disease of the chorion might be regarded as "an acute myxœdema of the chorion, the fœtus having ceased to develop at a very early period and prior to the development of

the thyroid." In the present instance the Society had to deal with a case of partial myxomatous disease of the chorion with a fœtus developed to the fifth month, and it therefore becomes important that the condition of its thyroid gland should be investigated in its bearings on Dr. Berry Hart's theory, more especially as the association of this disease with a fœtus which had advanced to the fifth month was unusual.

FIBROID TUMOUR OF THE UTERUS WITH CANCER.

Shown by Dr. Galabin.

Dr. Galabin showed a specimen of fibroid tumour of uterus complicated by carcinoma of endometrium, to illustrate that it is dangerous to leave a fibroid tumour when there is irregular or continuous hæmorrhage.

The patient was aged 50, and had been under treatment for a fibroid for at least ten years. The tumour was about the size of a six months' pregnancy. For three years there had been increasing menorrhagia, with the addition, for the last two years, of irregular hæmorrhage. Then menstruation ceased, and for about five months there was a slight, irregular, almost continuous sanguineous discharge. A very distinguished authority had recently advised her not to undergo any operation, on the ground that the menopause was likely soon to relieve her of her troubles.

Dr. Galabin suspected cancer, and removed the uterus on the day following that on which he first saw the patient. As there was suspicion only, he performed supravaginal hysterectomy in the first instance. The cancer was revealed on cutting open the tumour, and he then completed the operation by removing the cervix. There was calcareous degeneration in the centre of the fibroid. The carcinoma affected chiefly the lower part of the

cavity, but the piece of cervix removed separately did not show any. It was evidently not a malignant degeneration of the fibroid, but an invasion of it from the endometrium. But he had met the combination so frequently that he thought the fibroid tumours predisposed to the carcinoma.

The patient made a good recovery, and the vaginal scar appears quite sound. Microscopic sections of the cancer showed the ordinary cylindroid carcinoma.

Four months after the operation the patient was dying with metastasis in the upper abdomen, and peritoneal effusion.

BOSSI'S DILATOR.

Shown by Dr. Handfield-Jones.

Dr. Handfield-Jones exhibited a specimen of Bossi's dilator. He recognised fully the value of the instrument in dealing with emergencies, which called for rapid opening up of the lower uterine segment, and gave instances of suitable cases. The risk of rupture of the uterus was a very real one, and would always have to be borne in mind.

Dr. Herbert Spencer had used the instrument in three cases. The first patient had a contracted pelvis; the cervix was dilated up to 8·5 cm. in thirty-eight minutes, and the membranes were then ruptured so as to fix the head in the pelvis; the child was not born for forty-two hours, and died on the sixth day of cerebral hæmorrhage. The second case had a contracted outlet, breech presentation, and partial placenta prævia; external version was performed immediately before the dilator was used; the cervix was dilated up to 11 cm. in thirty minutes, and the child was delivered alive with the forceps, and left the hospital well. The third patient was suffering from uræmia at about the sixth month; the cervix was dilated in thirty minutes up to 11 cm.; the child was born alive, but died in twenty minutes. All the mothers recovered well. Some blood was lost during the dilatation in all the cases, and a considerable amount in the second

case. This showed that some slight laceration occurred, and though no deep tears had occurred in his cases he considered that this rapid method of dilatation was by no means free from the danger of rupture of the uterus, which had actually been met with by a foreign obstetrician. If the cervix were carefully examined during the dilatation it would be found that the blades embedded themselves in the mucous membrane of the cervix, producing deep grooves; and the ends of the metal caps were too thin, and might cut into the cervix. In these respects it was much inferior to Champetier de Ribes's bag, but it was superior to the bag in that it was much more rapid and did not displace the head. It was by no means proved that rapid delivery was beneficial in cases of eclampsia, and his own former experience was not in favour of it. But as very good results had been reported recently by Bossi, Leopold, and others, he thought it should be tried in these and other cases requiring rapid delivery; but he wished to give a note of warning as to its possible dangers, and would advise those who had no experience of rupture of the uterus not to use the instrument till the results in experienced hands were more fully known.

Dr. Russell Andrews said that he had seen Bossi's dilator used in three cases. In two of them, although the dilator itself did not cause any appreciable laceration of the cervix, a laceration sufficiently severe to require treatment was found after delivery.

Dr. Walter Swayne thought that for the benefit of those who, like himself, were unacquainted with this instrument, it would be well if those with experience of its use would define the class of case specially suited for its employment. He did not gather that as regards saving of time it was much superior to manual dilatation in cases in which the latter was indicated, but in the fact that it could be perfectly sterilised it undoubtedly had great advantages. He mentioned a case in which its use would have been invaluable where the patient was five months pregnant and in eclamptic convulsions. Delivery was only effected with the greatest difficulty, and took over one and a half hours to complete. In such a case he thought the use of this instrument would have been of incalculable value.

Dr. Blacker had used Bossi's dilator in a case of pernicious vomiting of pregnancy of six and a half months' duration. The patient had suffered from severe vomiting in the early months, which had passed off, but which had recently recurred in a very severe form. When seen the condition of the patient was very grave. She was vomiting incessantly day and night, the heart-sounds were weak, and the pulse 120 and very poor in quality. It was determined to induce labour, and for this purpose a Champetier de Ribes's bag was introduced under anæsthesia. In spite of intermittent traction upon the bag no pains occurred,

and after a lapse of eighteen hours, as the patient's condition was much worse, the bag was removed and the cervix dilated up with Bossi's dilator to the extent of 9 cm. The child was then turned and delivered. The dilatation was completed in twenty minutes. No tearing of the cervix could be detected on careful examination. The patient ultimately made a good recovery, the vomiting ceasing after delivery. He did not agree with Dr. Spencer that the dilator should be used in cases of placenta prævia, nor was it a suitable instrument to use for the induction of premature labour in contracted pelves. Its use should be restricted to cases of severe accidental hæmorrhages, cases of eclampsia where immediate delivery was indicated, and cases such as the one he had described.

TWO CASES ILLUSTRATING CHANGES IN FIBROIDS AFTER THE MENOPAUSE.

Shown by Mr. J. Bland-Sutton.

Case 1.—A married lady, 40 years of age, mother of four children, became aware that she had a fibroid. After being assured by many eminent practitioners whom she consulted that when the "change of life" came about her tumour would "dry up" and cease to trouble her, she naturally longed for the menopause; but it did not happen till she was sixty. For nearly five years this patient had a fairly comfortable time; then the pelvic discomfort returned, and to her great distress an ovarian cyst of the size of a fist was detected in the pelvis, incarcerated by the uterus, which, in consequence of the fibroid it contained, reached beyond the level of the navel. The patient put up with her discomfort some years, and then the fibroid began to extrude itself, and eventually became septic, so that when the woman reached her 69th birthday her condition was very serious. The temperature was 104°, pulse-rate 120, a fœtid fluid escaped from the vagina,

and her general condition indicative of great peril. Immediate removal of the tumours was the only course open to me. On opening the abdomen and drawing forward the uterus a large quantity of fœtid pus gushed forth, and an examination revealed a large collection of pus in the left half of the pelvis, due to the escape of septic matter from the left Fallopian tube. I removed the uterus with the fibroid, and the ovarian cyst, and the free pus; then thoroughly washed the recesses of the pelvis with warm water and drained with a gauze wick. Operative relief, however, had been postponed too late, and the patient died three days after the operation. As soon as I completed the operation the parts removed were conveyed to the bacteriological laboratory for the purpose of detecting the micro-organism which causes the decomposition of fibroids, but in spite of the kind and skilled help of expert bacteriologists the results were barren.

I have made many attempts to isolate the micro-organism which produces the putrid, fish-like odour which is noticed in many decomposing fibroids.

Case 2.—A patient 53 years of age, living in Burmah, knew for several years that she had a fibroid of the uterus, which she was assured would "dry up" and disappear at the menopause. When she reached fifty-two menstruation almost ceased, but to her disappointment the tumour began to grow, and the doctors recommended her to return home with speed.

I found in the pelvis a very hard fibroid, and a large independent mass projected in the hypogastrium and reached high above the navel. There was little difficulty in assuming that the hypogastric mass represented a softening fibroid. The operation was accomplished without difficulty. The portion which had moulded itself in the pelvis had the toughness and density of cartilage; the larger mass above consisted of a fibrous shell filled with gelatinous diffluent material. Patient left the nursing home twenty-one days after the operation.

My object in showing these two specimens is to draw attention to the fact that fibroids are more troublesome after the menopause than many Fellows of this Society are inclined or willing to believe, and the following facts may serve to draw additional attention to this matter; for though we all agree that as a rule fibroids cease to grow, and may even shrivel or shrink at the menopause, they by no means cease to give trouble, and I have endeavoured to obtain a statistical basis on which we may estimate, roughly it is true, the amount of trouble; some of the records available are extremely valuable. For instances Dr. Cullingworth published a paper on the surgical treatment of fibroids, and analysed the conditions which rendered operation necessary in 100 consecutive cases. The ages ranged from 23 to 61 years, and of this series 10 per cent. had attained their fiftieth year and onward. The changes in the fibroids removed from these ten women were either septic or necrotic.

Mrs. Scharlieb published a report on the same lines, and with much the same result. Her cases ranged in age from 19 to 68 years; seven of the patients were 50 years and upwards. Bond (of Leicester) reported a consecutive list of fifty operations for fibroids; four of the patients were 50 and upwards. The oldest patient in his list is noteworthy, for she was in her 56th year, but had had the menopause at 40.

Dr. Lionel Provis, Registrar at the Chelsea Hospital for Women, at my suggestion made a list of 100 consecutive cases of uterine fibroids operated upon in that institution by the staff generally. The result is instructive. The ages run from 25 to 66 years, and of the whole number eleven had reached 50 years and upwards. The oldest patient (66 years) had a big fibroid presenting at the vulva; it was removed piecemeal, the operation being attended with excessive bleeding.

It is certainly astonishing to find that so large a proportion as 10 per cent. of the patients from whom it is necessary to remove fibroids are women at a period of life

when it has been customary to assure them that these things cease from troubling; and surely there is nothing in the whole range of surgery more ironical than a woman (as in Case 1) spending thirty years of her life as a chronic invalid on account of a uterine fibroid, with the expectation that at the menopause she will be restored to health and begin a new life, and then to realise that far from this dream being fulfilled her tumour becomes necrotic, extruded, or septic, and places her life in the gravest peril, and she may die in spite of surgical intervention.

Mr. Alban Doran had found the fluid in a cystic fibroid septic and fœtid, though the cystic cavity did not communicate with the tubal canal or endometrium; nor was there evidence of disease of the appendages or endometrium, nor any septic material in any part of the genital canal.

Dr. Handfield-Jones thought that Mr. Bland-Sutton had drawn a very inaccurate picture of the dangers caused by fibroids after the establishment of the menopause. He had picked out cases from tables of fibroids which had been operated upon, and had totally ignored the vast majority of cases in which fibroids had undergone atrophy and remained absolutely harmless up to the end of life. Such inaccurate statements were apt to be very misleading, and do much harm to the progress of true scientific surgery.

INAUGURAL ADDRESS.

Ladies and Gentlemen,—Courtesy demands and custom sanctions the rule that the first words of the President on an occasion like the present should be personal—that he should express the sentiments which at the moment fill his mind in relation to the position conferred by your suffrages upon him.

Let me, therefore, beg you to accept my grateful recognition of the honour you have done me and my sincere appreciation of such a distinction.

In taking up my duties I rely with confidence upon your support; no doubt I shall need your forbearance. Observation tells me that each of these will be ungrudgingly accorded; that the tenure of my office will be relieved from stress, and strengthened by your co-operation. Imbued with such reassuring convictions, I enter the arena hopefully and with good courage.

It is fitting, too, that I should acknowledge the tribute paid to the provinces in this appointment, I think with justice to the universities and schools of medicine engaged in teaching the science and art we profess. These have a large representation in this Society, and claim to be mutually interested in its stability and progress.

I foresee in the wisdom of this change a source of strength, an element in our fellowship which cannot fail to be productive of good result. It will form an objective to be aimed at, an incentive to special work, a desire to achieve the highest reward we can hope to attain—the goodwill and trust of our professional brethren. This augury of the future opens with the dawn of liberal and progressive aspirations.

Ladies and gentlemen, I must confess that I experienced considerable difficulty in finding a subject

sufficiently suitable for an address this evening. The ground within the scope of our purview has been carefully cultivated; it has produced in a succession of years rich harvests. I come as a gleaner, my predecessors have been masters of the situation; their skill and assiduity has left but small comfort to the straggler, little to be gathered after the keen and watchful observation of those who have occupied this chosen field, who have contributed so ably and in so much variety to the garner of our special knowledge.

I remember years ago, in the beautiful Abbey Church of Bath, standing before a monument which attracted me by the remarkable inscription it bore. It was to the memory of a remarkable man—Malthus. The words set forth in the redundant phrases of the period the virtues and excellences of his character and work, ending with a singular, almost prophetic, significance, that the good he had done, though not sufficiently recognised in his lifetime, would come to be realised by posterity. I asked myself the question, "Is this so?" I have repeated it at times since, and have heard the echo alone. Still there seems to me that there should be more than the hollow sound contained in this response; that it might be made a text, possibly not for solution, but for reflection; that it might afford consideration of some social problems not destitute of interest to Members of this Society. Some aspects of the economic and of the antenatal waste of life in Nature and civilisation suggests itself as a subject upon which we may look for a brief space, and in the pause consider how it may be viewed in a manner germane to the objects of our foundation, and with the highest principles before us. The trend of popular opinion in the present day, with the vast educational opportunities, the easy access to advanced special and general knowledge, has led to independence of thought and freedom of expression on many social subjects. Outside our own profession there are many who have learned to form their own judgment upon important social topics formerly

believed to be the exclusive possession of medical experts. We, as individuals, are often called upon to share or to encourage opinions put forward with all cogency by eager partisans or belated enthusiasts, rather than to assist in the formation of sound and practical ideas. Silence, it has been said, is not progress, nor, I may add, is mere acquiescence a consistent or dignified sense of duty. We need not hesitate to accept responsibility in matters of grave and serious importance to the State and to the community. Nor are we right in withholding our knowledge and our influence in directing those who, in all purity of motive, should be guided in the formation of upright and salutary principles, either in the conduct of their health or in just allegiance to a wider range of social interests.

The observations of Malthus led him to formulate certain propositions, which I may shortly refer to; they were: (1) Population is necessarily limited by the means of subsistence. (2) Population invariably increases where the means of subsistence increase, unless prevented by some very powerful and obvious checks. (3) These checks, and the checks which suppress the superior power of population and keep its effects on a level with the means of subsistence, are all resolvable into moral restraint, vice, and misery.

From the examination of statistics then available, he enunciated the statement that population when unchecked goes on doubling itself every twenty-five years, or increases in a geometrical ratio. The rate according to which the productions of the earth may be supposed to increase he estimated under a different mode of progression, that the means of subsistence could not possibly be made to increase faster than in an arithmetical ratio. However great the production of the earth may be, yet, still, the power of population being in every period so much superior, the increase of the human species can only be kept down to the level of the means of subsistence by the constant operation of the law of necessity acting as a

check upon the greater power. Thus, according to the author, the ultimate check appears to be a want of food, arising necessarily from the different ratios according to which population and food increase; this is never the immediate check but in exceptional instances, such as famine. The immediate check he stated to be all those customs and all those diseases which seem to be generated by a scarcity of the means of subsistence, and all those causes independent of this scarcity, whether of a moral or a physical nature, which tend prematurely to weaken and destroy the human frame. Further, he classifies these checks under two heads, the preventative and the positive. The former, as far as it is voluntary, is peculiar to man by the exercise of his reasoning faculties, which enable him to calculate distinct consequences. The checks to the indefinite increase of plants and irrational animals are all either positive or, if preventive, involuntary.

The sagacity of Malthus led him to draw definite conclusions from these statements, which have had far-reaching effects. His deductions have formed the ground of much contention and prolific criticism. They have been sadly abused, greatly misapplied and misinterpreted since his time. It is not my purpose to defend his position or to traverse the application of his doctrines by the so-called neo-Malthusians, fortified as they have been by the light of more recent biological science and the study of sociology since the period at which he wrote—a hundred years ago. The advanced party in our modern civilisation hold pronounced views upon these social subjects, views which, fostered by observation of society as it exists, and aptly promoted by zealous partisans, differ hugely from the unwritten laws and traditions of the past. The active promulgation of these tenets threatens to exercise a distinct influence upon our lives as individuals, and even on our position as a nation. They call for the patient thought of all who are earnest and reflective among us.

I wish, however, to call attention to some of the cir-

cumstances which operate in lessening the amount of life, and to the enormous waste thereby entailed.

Throughout nature we find a prodigious loss in whatever direction we turn; from the lower forms to the higher the analogy holds good; from the general to the special we may trace the path to disintegration and oblivion. This disintegrating process is continuous. It has been demonstrated emphatically in forms of plant life, even as to minimise the poetic estimate of the late Laureate:

> "That I considering everywhere
> Her secret meaning in her deeds:
> And finding that of fifty seeds,
> She often brings but one to bear."

Such are the efforts made for existence in the survival of the fittest that, says Darwin, a plant which annually produces a thousand seeds, of which only one on an average comes to maturity, may be truly said to struggle with the plants of the same and other kinds which already clothe the ground. Mr. C. H. Bailey asks the pertinent question, What becomes of this enormous surplus of seed? After certain deduction for waste, etc., he says every farmer sows five to twenty times more seed than he needs, and adds that not more than one in ten or a dozen in garden vegetables ever grow to mature plants; they are thinned out for the good of others; it is a process of undesigned selection; the weak individuals are disposed of; the strongest are preserved—a clear instance of the survival of the fittest.

In wild nature also a similar prodigal production occurs; not one infant tree in a thousand lives to maturity in the forests—crowding, choking, killing each other by their very abundance; the same competition and struggle for existence; the same "mutual havoc that marks all organised beings, from men to mushrooms." This hurtful luxuriance is regulated by certain counter-checks in nature—nature red in tooth and claw,—and thus a part is sacrificed for the whole. The rate of reproduction is so

great among some forms that some worthy naturalists quaintly put it, in speaking of insect life: were it not for these counter-checks—the preying of one form of life upon another—we should be driven to a state of extreme wretchedness, and in the end we might, in all probability, be driven with all the larger animals off the face of the earth. It is stated that the Arabians knew the formidable effects of this multiplicity in reproduction when they represent a locust as saying to Mahomet, "We are the army of the great God; we produce ninety-nine eggs; if the hundred were completed we should consume the earth and all that is in it."

This figurative assertion embodies a plausible truth in the theory of natural selection. The number of possible organisms which might arise from the germs produced is far greater than the actual number matured. By far the larger number perish before coming into existence, or on the threshold of life; only the more favoured ones succeed in the struggle and finally continue their species. The rate of reproduction and of multiplication therefore varies; for instance, some fowls lay great numbers of eggs, yet are among the rarest of birds; on the other hand, it is observed that perhaps the commonest bird lays only one egg. The rate of reproduction depends upon the individual organism, its surroundings, and especially nutrition; the rate of increase, or otherwise, upon its relations to the environment, the adaptation to the external complex medium in the struggle for existence.

The extensive waste and the opportunity for prey in the infinite number of the ova in fishes is proverbial and well known.

Among domesticated animals the rate of reproduction and of multiplication varies greatly. The tendency or readiness to antenatal death, or abortion, also differs much. The bitch and the cat rarely abort, even after serious injuries. The pig retains its fœtuses almost as tenaciously. Sheep and goats are rather liable to it. The mare and the cow more frequently lose their fœtus.

In looking through the supplement of the 'General Stud Book' for the year 1902, containing the number of mares for that period, I find that out of 4601, there were 3170 colts and fillies born, 1297 barren, and 131 slipped, *i. e.* aborted.

It is not easy to obtain definite data as to the ratio of abortions among cows, though in many respects their pregnancies and complications bear more near comparison with the human race. I quote from Mr. George Fleming, who writes :—Baumeister and Rueff state that in France, in a dairy containing Durham cows and numbering one hundred pregnancies, there were seventeen abortions; also at Hohenheim, from a register kept for thirty years it appears that one fifth of the cows aborted. What is known as epizootic abortion—that is, apart from injury or fright to the animals—at times affords very serious losses to cattle breeders. It is interesting, in passing, to mention, as recorded by Mr. J. McFadyean, that bacteriological examination has demonstrated the presence of a particular bacterium in the uterus of a cow showing the premonitory symptoms of abortion, and taken from a herd in which numerous cases of abortion had recently occurred. This bacterium has been cultivated in a state of purity outside the body, and abortion has been produced in apparently healthy pregnant cows by introducing such pure culture into the genital passages. He further states that there is a body of clinical and experimental evidence to show that a cow that has recently aborted is capable of infecting healthy pregnant cows so as to induce abortion in them. Mr. Walter Heape tells us that the information collected from over three hundred flock masters showed that in more than two thirds less than 2 per cent. of the ewes aborted, and that less than one tenth of the flocks had over 5 per cent. abortions. The highest percentage of abortions given in a table relating to 397 flocks is 23·75, but elsewhere in the article it is stated that many flock masters in the wolds had as high as 50 per cent. of their ewes abort.

Biologists have ceased to separate man from nature, and they have been followed by pathologists who have ceased to look upon man apart from animals. Observation has discovered more and more of the fundamental similarity in the structure and functions of man and animals. These comparative studies are therefore not devoid of interest or unworthy of close study, from the pathological analogies to be drawn from them, as well as the economic inferences as to prevention and loss.

But, ascending higher in the scale of organised beings, what concerns us more deeply is the waste of life arising from positive and preventative causes in our own species. We are all painfully aware of the great loss entailed in the first year of existence, particularly among the poorer classes; the return for the year 1900 in England and Wales shows that it is 154 to 1000 births, as against an average of 153 in the preceding ten years. The loss of life from puerperal fever and other accidents of childbirth, or deaths consequent on parturition, is set down at 4·81 per 1000 births for the year 1900; the number of deaths from abortion 218, and the number from premature births alone, apart from other developmental diseases, 18·479. The comparison between the birth-rate and the death-rate offers a mine of singular and instructive evidence.

From an economic point of view a diminishing birth-rate comes to be a matter of supreme importance. As this knowledge is placed beyond surmise in the report of the Registrar-General, there is no excuse that the fear is a vague one, or that the figures are not explicit enough to call for serious attention.

The broad facts are that although the population of Great Britain increased by three and a half millions between 1891 and 1901, the margin between the birth-rate and the death-rate is narrowing, and in several most populous localities has fallen down to nearly the French standard. In the period 1871 to 1881 the ratio of births to the 1000 was about 38; it has dropped steadily, until now it stands at 31·7. If the ratio of 1891 had been

maintained there should have been 164,000 more children under fifteen years of age in London alone, and 180,000 in Lancashire. But for the fact that the death-rate has also dropped—now 19·18 per 1000—the decline in the birth-rate would have been as startling as it is in France, where the mortality figure in the year 1900 was nearly 1 per 1000 higher than the birth-rate. Still, the net increase with us was 495,000 less than it would have been had the 1881 to 1891 rate been maintained. It may be observed that this decline of the birth-rate affects certain areas more than others; it is more marked in the manufacturing towns, lowest in the colliery districts; the lowest birth-rate prevails chiefly among the upper classes, a fact of significance suggestive of future and prominent consequences.

I have said that a falling birth-rate is a matter of anxious consideration to a country. The explanation comes from various causes operating more or less powerfully in the present day. The chief of these are celibacy, delayed marriage, and the limitation of families. It was the opinion of Malthus, forcibly and repeatedly expressed, that no man should bring beings into the world for whom he could not find means of support; hence he advocated deferred marriage until the prospects of this could be reasonably accomplished, as a great check to over-population. On the other hand, this stress of population, as it is called by Spencer, is one of the main features of individuation in the more modern social view. In the higher classes no doubt the operation of this rule is that men more frequently marry late in life, or not at all; the ideal of the average individual is not an altruistic one, but the desire to live in the greatest ease and comfort with the least possible effort. With reference to this question of marriage, a paper read by Dr. Ogle before the Statistical Society some years ago affords much valuable and interesting information. His tables show, at any rate, with sufficient clearness, that the ordinary belief that the lower the station in life the earlier the age at which marriage is contracted is true, and that the difference in this respect

between the upper and lower classes is very great indeed. For instance, the average of the marriage age of miners is 24 and of their wives 22½ years, while the ages of the professional and independent classes are 31 and 26½ years respectively—a difference of seven years for the husbands and four for the wives. Dr. Ogle was of opinion that, as far as the increase in population goes, the matter of importance is the age of the wife and not of the husband; and any material diminution in the growth of the people that is to be looked for from retarded marriage must be obtained by retarding the marriages of women. In France there is much concern at the present time about the question of depopulation, and an extra Parliamentary Commission has been appointed to consider the subject. Thus it seems in that country, from statistical tables ('B. M. J.,' January 31st, 1903), that of the whole male population of France between the ages of 20 and 24 only 7 per cent. are married; of men between the ages of 25 and 29 a little over 50 per cent. are married. Still, of the whole male population of France between the years of 18 and 49 it is a striking fact that 45·8 per cent. are unmarried, while of the whole female population between the ages of 15 and 49 there are 44·9 per cent. unmarried. M. Dumont, a high authority, thinks that, without altering in any degree the fecundity of the individual, the lowering of the age of marriage from 28 to 24 for men and from 24 to 20 for women would sufficiently raise the birth-rate to enable France to keep abreast with other nations. There are divers considerations of another kind affecting this question, which it is unnecessary to dwell upon.

But with us, as regards men, it is not the age at which they marry that is of so much importance, but the question whether they marry at all. It appears that in the upper classes, not only do a large proportion remain throughout life unmarried, but those who do marry, marry at a much more advanced age than is the case with the rest of the population. Apparently this cause,

along with caste distinctions of intermarriage, affords an explanation of the decline of aristocratic families, in some instances even to their obliteration.

The difference I have alluded to in the birth-rate between the upper and the lower classes indicates that society is continually renewing itself at the base and dwindling in the upper strata. Those exhibiting the reproductive capacity more fully are gradually, yet surely, encroaching in numbers upon the more carefully cultured and intellectual classes. When the principles of this great social evolution are more widely and more truly apprehended there will be a clearer insight into the relation of causes and effects, an ardent pondering of many intricate problems which confront the future; not the least of which, according to Spencer, will be that it is on an increase of the psychical activities that *increased individuation* and *diminished genesis* in the time to come must depend and may be looked for. But what I wish to draw attention to more particularly, and what is more the home subject of this Society, is the waste of life from antenatal losses, positive and preventative. There appears to be a growing tendency to place a lessened estimate upon the value and preservation of this form of being. There is a tardy acceptance among us of what seem to be the plain deductions from such a want of recognition. The consequences are fraught with serious meaning; they aim at the fundamental laws of society.

In order to show more clearly the waste from antenatal loss I have taken a number of cases from my hospital out-patient books, and an equal number from the note-books of my private cases—the latter presumably in a better class of life. The total represents 4000 married women taken back in consecutive order from the present date. I have not added the doubtful cases, about which there is much uncertainty in getting trustworthy information. Let me say, in parenthesis, that on few subjects do women mislead more than on the question of miscarriage or pregnancy. History repeats itself. Sterility is still con-

sidered among many women to be a reproach; none like to admit that they are incapable of childbearing, and upon few matters do they seek to persuade themselves more firmly than upon this aptitude. Hence, while weakly reasoning they strongly feel; often unwittingly, or even with *malice prepense*, they fondly and boldly pervert patent facts, forgetting that testimony is not evidence, and that self-deception is not belief.

TABLE I.—*Analysis of pregnancies in reference to abortions and to fecundity.*

	2000 hospital cases.			2000 private cases.		
	No.	Percentage of whole.	No. per woman.	No.	Percentage of whole.	No. per woman.
Children . .	7687	84·14	3·84	4440	83·87	2·22
Abortions . .	1444	15·86	0·72	854	16·13	0·42
Total pregnancies	9131	100·00	4·56	5294	100·00	2·64

TABLE II.—*Ratios of abortions to pregnancies and children.*

	2000 hospital cases.		2000 private cases.	
	Percentage.	Being about 1 in	Percentage.	Being about 1 in
Ratio of abortions to pregnancies	15·86	6	16·13	6
Ratio of abortions to children	18·85	5	19·23	5

TABLE III.—*Analysis in reference to fecundity, sterility, and abortions.*

	2000 hospital cases.	2000 private cases.
Total number of children .	7687	4440
Total number of abortions .	1449	854
Proportion of children to number of pregnancies	84·13 per cent.	83·86 per cent.
Proportion of abortions to number of children	18·85 per cent.	19·23 per cent.
Number of sterile women .	195 = 9·75 per cent.	386 = 19·3 per cent.
Number who had not aborted at all	1176	1363
Number who had aborted only	72	55
Ages: 30 and below . . .	715	488
Ages: Between 30 and 40 .	653	711
Ages: 40 and above . .	632	801
Total . . .	2000	2000

TABLE IV.—*Summary of* 4000 *cases.*

Total number of children, 12,127.
Total number of abortions, 2303.
Proportion of children to number of pregnancies, 84·04 per cent.
Proportion of abortions to number of children, 18·99 per cent. = 1 in 5.
Number of sterile women, 581 = 14·525 per cent.
Number who had not aborted at all, 2539 = 63·475 per cent.
Number who had aborted only, 127 = 3·175 per cent.

Ages: 30 and below	1203
Ages: Between 30 and 40	1364
Ages: 40 and above	1433
Total	4000

From these tables the inferences to be drawn seem to point to the great waste of life from abortions and antenatal death. In the gross these do not appear to be very different in the two classes of society. But the actual number of cases of sterility are very much in excess among the higher classes in these tables, some of them doubtless from positive causes, but a large proportion from others and more obviously preventive. This brings out, then, the

point of the question, viz. the loss of life—or waste—from first, positive; second, preventive causes.

1. The tables show the greater fecundity of the poorer classes. The number of children is very nearly double in the hospital cases compared with the private list. This is not a desirable condition of things in a country burdened with taxation, heavy poor-rates, and swarming with aliens.

2. That the better classes abort more frequently than the lower. The percentage of abortions is greater among the well-to-do married class. Why? Is intentional abortion a factor of any grave significance? It is also worthy of notice that the percentage of abortions in the upper class is greater, whether in relation to their pregnancies or their number of children. It follows that among the better class there is a great antenatal waste.

3. Sterility is far commoner among the better class. The figures speak for themselves. Most probably some of this is intentional sterility, and if so goes far to accentuate the fact that a general decadence is manifest. This table also tends to prove that abortion is relatively more frequent among the well-to-do, because the greater number of sterile women among the private list leaves a much smaller number of women the chance of aborting than among the lower class.

4. That the proportion of one miscarriage to every five children, or 20 per cent., expresses a formidable antenatal waste of life. Despite the marked advances made in obstetrics and gynæcology during the past twenty years, a 20 per cent. abortion status is far too high.

5. The subject must suffer to some degree from inaccuracies, and statistics must be of some dubious value where it is impossible to compute the number of stillborn children. In view of this statement it seems to be very desirable that the birth of stillborn children should be recognised and registered.*

* In estimating this number the only information available is from the records of maternity hospitals and lying-in charities. From these sources I judge it to be about 3 per cent. as nearly as I can form an opinion.

6. Lastly, these statistics are taken from 4000 cases, including the entire productive life of women, and in computing sterility, roughly two years of married life has been allowed.

Sir William Priestley, in his work upon 'The Pathology of Intra-uterine Death,' classifies the causes as—first, those acting through the male parent; then those which act through the intervention of the mother; and lastly, those which more particularly belong to the fœtus itself, although possibly remotely related to both parents. Since the time at which he wrote, 1887, there has been a complete change in this branch of pathology relating to the placenta, and decided alteration in the views and opinions regarding the early development of the embryo.

It is more difficult to form any accurate estimate of the actual loss from antenatal deaths, from monstrosities, various diseases, and degenerations.

According to Weismann, from the evolution standpoint the origin of a variation is due to the constant occurrence of slight inequalities in the germ plasm, and that, as the acquired characters affecting the constitution of parents are certain to affect the nutrition of the germ plasm, it is therefore clear that acquired characters, or their consequences, will be inherited.

The attention of the profession to antenatal diagnosis, and the important conclusions it unfolds, has been ably set forth by Dr. Ballantyne. His observations will go far to reform our knowledge, and to stimulate further inquiries into this subject. There is a prospect of much valuable aid from this branch of research, with the probability of much light being thrown upon the explanation of many physiological and pathological processes.

The number of deaths registered from abortion, as I have said in the report quoted, for the year 1900, number 218; manifestly this is a small proportion to the number of cases of abortion which occur so frequently in the practice of medical men. Many, no doubt, are classed under septicæmia, peritonitis, pelvic peritonitis, etc. I

cannot say whether some of these might be classed as preventable, or how many; but this I know from personal observation, and from the statements of fellow practitioners—that there is a great waste of life, and consequent loss to the country from this cause. That is, that the limitations of families and the overt means taken to restrict the production of infant life is responsible for a great proportion. From a medical point of view the society aspect of the restriction of families has come before us much more prominently in recent years. The subject is more openly discussed and talked about.

We cannot adhere to that most unfortunate dictum of Burke when he assigned as a reason for regretting the departure of the age of chivalry the fact that "in those days vice had lost half its evil by losing all its grossness." As an abstract ethical truth the knowledge of wickedness is not wisdom; the thinly veiled sophistries of the teaching of what is called modern civilisation are rapidly growing in the community. The unscrupulous use of the advertisement columns in some newspapers and of our postal facilities by the quacks who flaunt with shameless aggressiveness the nostrums and means for the prevention of offspring, is well known to us.

The conversation of the day among women of all classes, some of whom, more advanced than others, with unblushing effrontery distribute printed information for effecting this object, is equally notorious. Nay, among some even the understanding at the time of marriage that no children are to be the result is not an infrequent episode in society life. This so-called compact is flatteringly self-justified on the ground of conveniency, insufficiency of means, the idea of pleasure, and often speciously on the ground of health.

The profligacy and hollowness of social life from such illustrations has removed the necessity for any reticence on the part of teachers who can feel themselves free to oppose these misguided evils, and to face them with an uncompromising force of juster reasoning. That it was

the custom, as well as the convenience, of provoking miscarriages at will, coupled with the utter disregard of the value of infant life in ages long ago, we have the testimony of historians. This pernicious practice has led to protective legislation in many countries. Even amidst the culture and refinement of Greece we may infer that the habit very generally prevailed, from the precautions which we read to have been specially directed against it. The venerable Father of Medicine, in the oath which he obliged all who became his disciples to take, especially condemns it, and exacts from them the solemn declaration that they will never be guilty of attempts to frustrate the designs of nature in this respect.

If the type of virtue has not faded; if the character of human nature has not utterly decayed; if there has been no progress since his time, even in this respect, shall we not consummate this high ideal and abide by the Hippocratic oath? or shall we, as citizens of an advanced materialistic civilisation, shelter ourselves behind the doubtful cloak of what is called the teaching of science—the soulless evolution of a blighted and corrupt interpretation of the supernatural above nature?

I thank you for the patience with which you have listened to this somewhat discursive and desultory address. I plead the short notice, the participation in an active life, the multiplicity of daily duties, in the endeavour to collect stray thoughts and draw conclusions on subjects of engrossing importance.

We come and go. The old order changeth; each in turn plays his part on this mundane stage. The curtain falls; we sink behind the scenes, and, drifting into the vast thoroughfare of the world outside, our voices are lost amid the tumult of the restless throng; or, as Lowell pithily expresses the sentiment—

> "Life is a leaf of paper white,
> Whereon each of us may write
> His word or two, and then comes night."

A vote of thanks to the President for his Inaugural Address, which he was requested to allow to be printed in the next volume of the 'Transactions,' was proposed by Dr. Watt Black, seconded by Dr. Horrocks, and carried by acclamation.

APRIL 1st, 1903.

Edward Malins, M.D., President, in the Chair.

Present—48 Fellows and 3 visitors.

Books were presented by the American Gynecological Society, the Boston (U.S.A.) Lying-in Hospital Staff, Dr. Whitridge Williams, Mr. Alban Doran, and the Royal Medical and Chirurgical Society.

Louisa Garrett Anderson, M.B., B.S.Lond., was admitted a Fellow.

William L. Farncombe, M.D. (Harborne); William Alexander Potts, B.A., M.D.Edin. (Birmingham); and Smallwood Savage, F.R.C.S. (Birmingham), were declared admitted.

The following gentlemen were proposed for election:—William Nolan, L.R.C.P.&S.I., L.M.Dubl.; Henry Thomas Hicks, F.R.C.S.Eng.; Robert Adrian Ironside, M.D., C.M.Aber.

The following candidates were elected Fellows of the Society:—John Cyril Holdich Leicester, M.D., B.S.Lond., F.R.C.S.Eng., Captain I.M.S.; Nathaniel Henry Turner, L.R.C.P.Lond.; Florence Elizabeth Willey, M.B., B.S.Lond.

A CASE OF PRIMARY INFECTION OF THE PUERPERAL UTERUS BY *DIPLOCOCCUS PNEUMONIÆ.*

By Mr. Alexander G. R. Foulerton, and Dr. W. F. Victor Bonney.

In the course of an investigation into the bacteriology of cases of puerperal fever we have, up to the present time, met with only one in which an infection by the pneumococcus (*Diplococcus pneumoniæ*) has occurred; and the literature relating to puerperal fever shows that such infection is of sufficiently rare occurrence to justify us in recording this case in the 'Transactions' of the Society.

A woman aged 24 years was seen in consultation on December 10th, and the following history was given:—The patient had been delivered of her first child ten days previously, after a rather difficult labour in which the use of forceps was necessitated by a contracted pelvis. On the third day after delivery there was a sharp rise of the temperature, which during the next seven days ranged between 103° and 105° F. Shortly after the onset of fever it was noticed that the abdomen was tender towards its lower part. The patient vomited occasionally, and rigors occurred.

Vaginal douches and warm fomentations to the abdomen were ordered, but the circumstances of the patient were such that the treatment prescribed could not be carried out efficiently.

When seen on the tenth day after delivery, the seventh day of the fever, the patient's condition was as follows:—Her face was haggard and of sallow complexion; her mind was quite clear, and she spoke with a strong voice. The temperature was 105° F., the pulse-rate was over 150, the respiratory rate was not markedly increased. The lower part of the abdomen was tender on palpation, and an indefinite dulness could be distinguished there, more

marked, and extending higher up, on the right side. The lochial discharge was of a brown colour, and of offensive odour. A perineal laceration had been united by suture immediately after delivery, but the union had broken down, and the perineum now presented a wound with swollen and everted edges and a sloughing surface. There was a large sloughing laceration of the anterior lip of the cervix, extending into the anterior vaginal fornix. The outline of the uterus was obscured by a considerable pelvic effusion, in which the organ was embedded and fixed. The effusion was of larger extent on the right side. An examination of the heart and lungs showed the absence of any signs of local disease.

Under the circumstances it was decided to transfer the case to a hospital, and the patient was admitted into the Temperance Hospital, where she came under the care of Dr. Addinsell. And we have to express our thanks to Dr. Addinsell for his kindness in supplying us with further details as to the history of the case, and as to the findings at the examination made after death.

The patient sank rapidly after admission into the hospital, and died on December 14th, the fifteenth day after delivery.

Autopsy.—From Dr. Addinsell's notes we gather the following particulars :—On opening the abdomen it was seen that there was some distension of the intestines and a general injection of the peritoneal membrane. There was evidence of localised peritonitis, by which the contents of the pelvis and some coils of intestine in the right iliac region had been bound together by adhesions of recent formation. There were collections of pus and turbid serous fluid between the adherent coils of intestine. The right broad ligament especially was thickened by effusion into its substance, and extended as a swollen mass into the right iliac fossa. The uterus was in a condition of subinvolution; its walls were thickened and softened. In the uterine cavity there was a small piece of placental tissue still adherent. There was a lacerated wound of the cervix. The mesenteric glands were congested. The kidneys were

of normal appearance; the spleen was slightly enlarged and firm; the liver was pale and somewhat soft. The heart was of normal appearance. There was some blood-stained fluid in the right pleural sac, and some adhesions had formed in the left sac. The base of each lung was congested, but there was no sign of pneumonic consolidation.

Bacteriological examination.—When the patient was seen on December 10th, material for bacteriological examination was obtained from as high up the cervical canal as it was possible to pass a "swab." We were not able in this case, as in most of the other cases of puerperal fever which we have investigated, to pass the "swab" completely into the uterine cavity.

The microscopic examination of cover-glass preparations from the "swab," stained by Gram's method, showed the following organisms:

1. A number of diplococci with distinct capsules, which stained by Gram's method and morphologically resembled *Diplococcus pneumoniæ.*

2. Groups of staphylococci, which also stained by Gram's method.

3. A bacillus which did not stain by Gram's method, and which morphologically resembled the *Bacillus coli communis* subsequently isolated.

The material on the "swab" was then rubbed up in pepton broth, and the resulting emulsion was plated out. From the agar plates thus prepared three organisms corresponding with those recognised in the stained preparations were isolated:

1. *Diplococcus pneumoniæ;*

2. A staphylococcus corresponding in general character with *S. pyogenes albus;* and

3. *Bacillus coli communis.*

A small quantity of the emulsion made from the swab was injected into the peritoneal sac of a mouse. The animal died eighteen hours after inoculation, and a pure culture of *Diplococcus pneumoniæ* was obtained from its peritoneal juice and from the heart blood.

Three other mice received intra-peritoneal injections of forty-eight-hour-old cultures in broth of the organism isolated from the agar plates. In each case a dose of 25 c.c. of broth culture was injected. Of these—

Mouse 2 was obviously ill twenty-four hours after the inoculation, but recovered. The animal was killed on the fifth day, and culture tubes inoculated from the peritoneal juice and from the heart blood remained sterile.

Mouse 3 died eighteen hours after inoculation. A pure culture of *Diplococcus pneumoniæ* was obtained from the peritoneal juice and from the heart blood.

Mouse 4. This animal died five days after inoculation. In this case also pure cultures of *Diplococcus pneumoniæ* were obtained from the peritoneal juice and from the heart blood.

The bacteriological record of the case is incomplete, inasmuch as we had no opportunity of examining the peritoneal effusion found after death. But we think that there can be no reasonable doubt but that the case was primarily one of pneumococcic infection, the other organisms which we isolated—*S. pyogenes albus* and *B. coli communis*—representing casual secondary infection. And we regard the infection as a primary one of the genital passages, since neither during life nor after death was there any evidence of any preceding lung infection by *Diplococcus pneumoniæ*.

In contrast with this case of primary infection of the genital passage by *Diplococcus pneumoniæ* we may mention another in which a bacteriological examination was recently made by one of us, and in which the presence of this organism in the uterus was clearly the result of a general infection following on pneumonia. The patient, a woman aged 31 years, was admitted into the Middlesex Hospital with definite clinical symptoms of lobar pneumonia on October 6th, 1902. She was about seven and a half months pregnant, and on the second day of her illness premature labour occurred. She died on the eighth day of her illness, and at the examination made after death a lobar pneumonia of the right upper lobe was found. The uterus contained some brownish fluid which, when stained,

showed a large number of organisms morphologically resembling *Diplococcus pneumoniæ*. Pure cultures of *Diplococcus pneumoniæ* were obtained from the lung affected, from the heart blood, from the spleen, from the fluid in the uterus, and from elsewhere.

As we said at the commencement, a primary infection of the puerperal uterus by *Diplococcus pneumoniæ* appears to be an event of rare occurrence, and although the organism is a frequent parasite of other healthy mucous membranes, Doyen appears to be the only author who has recorded the presence of *Diplococcus pneumoniæ* in the healthy vagina, and he only found it on one occasion.

Weichselbaum ('Wien. klin. Wochenschrift,' No. 28, 1888) and Bar and Tissier ("Séropathie dans l'infection puerpérale," 'L'Obstétrique,' pp. 97 and 204, 1896) quote cases of primary infection of the genital passage during the puerperium; but the latter writers do not bring forward adequate proof of the nature of the infection in their cases, as the bacteriological diagnosis was formed merely on the examination of cover-glass preparations made from the lochial discharges.

Another condition in which a pneumococcic infection of the uterus may occur is that recorded by Colin ('Münchener medicinische Wochenschrift,' p. 1558, 1899). In this case severe metrorrhagia came on some three months after an abortion. On the eighth day after the commencement of the hæmorrhage the patient came into hospital, and the uterus was found to be enlarged and tender. Symptoms of meningitis followed, and the patient died. At the examination after death there was found suppurative endometritis with retention of placental tissue, together with endocarditis, suppurative meningitis, and softening infarcts in the spleen. From all of the lesions cultures of *Diplococcus pneumoniæ* were obtained.

Finally, several writers claim to have identified *Diplococcus pneumoniæ* in cases of salpingitis, either when following childbirth or when secondary to a vaginitis. Thus Witte claims to have identified the organism in four

out of thirty-nine cases of salpingitis examined, Hartmann and Morax in two out of thirty-three cases examined, and Zweifel, Frommel, and Wertheim have each recorded a single case of the sort.

The President remarked that observation has shown the frequency of pneumococcal infection in a great number of cases where it had been unsuspected. He was inclined to believe that it is often dormant, the infection depending upon the virulence of the organism and the resisting power of the patient; under these adverse conditions the *Diplococcus pneumoniæ* takes on active pathogenic qualities in various directions. Lately he had seen two cases, one in which a spinal puncture was made; diplococci were found in abundance, and a pure culture obtained. Another case of a woman pregnant about six months showed clinical signs of cerebro-spinal meningitis coming on suddenly. From a drop of blood taken Professor Leith found *Diplococci pneumoniæ*. The patient died quickly before a spinal puncture, which had been arranged, could be made. No doubt careful search would reveal the presence of the pneumococcus in many instances where sudden and obscure symptoms ushered in an illness.

TUBERCULAR DISEASE OF THE FALLOPIAN TUBES AND OVARIES.

Shown by Dr. Arnold W. W. Lea.

Two specimens of the uterine appendages removed for tubercular disease were shown, together with drawings and microscopic sections.

Case 1.—*Clinical history.*—Mrs. B—, aged 27, married three years, had never been pregnant. She had suffered for two years from pelvic pain and backache, but had never been compelled to go to bed. Menstruation was rather profuse, continuing for seven days, and accompanied by severe pain during the last two years. She had no leucorrhœa. The patient was well nourished. The abdominal viscera and heart and lungs were normal.

Per vaginam.—The uterus was anteflexed and movable,

not enlarged; the cervix healthy in appearance. Tubo-ovarian swellings were present on both sides, sensitive to the touch, and partially fixed by peritoneal adhesions. The temperature rose each evening to 100°—101°.

Abdominal section was performed. A little hydroperitoneum was present. The omentum was normal, not adherent in the pelvis. The fundus of the uterus was covered with small miliary tubercles. The appendages, much enlarged, and adherent to the floor of the pelvis, were removed by ligaturing the vessels and "peritonisation" of the broad ligaments. The right Fallopian tube was adherent to the rectum. An intra-peritoneal abscess was present, lying between the tube and the rectum, and containing two ounces of pus. No drainage was used. The patient made a rapid recovery. The temperature fell to normal on the third day. A recent examination (May, 1903) shows no sign of tubercle in the lungs or elsewhere, and the patient is in good health.

Description of specimen.—Both Fallopian tubes were much enlarged, tortuous, and distended by caseous pus. The uterine end for one third of an inch was not expanded; beyond this point each tube was much dilated. The fimbriated extremities were closed, but from the right tube some leakage of pus had occurred, forming the intra-peritoneal abscess.

On section the mucous membrane was much thickened by round-celled infiltration, with a few giant-cells. The muscular wall was very thin, and also showed tubercular infiltration. The plicæ were much folded and thickened, but the epithelial cells were in many parts clearly recognisable, the nuclei large, and the cell contents very granular and showing vacuolation. The mesosalpinx was thickened, but not obliterated. The ovaries were small and not adherent to the tubes. The tunica albuginea was thickened, but there was no evidence of tubercular deposit. The pus was examined for tubercle bacilli, but no organisms were found.

Case 2.—*Clinical history.*—Mrs. L—, aged 25, married seven years; no pregnancies. She complained of pain in

the epigastrium, and also in the back and iliac regions, with severe attacks of vomiting. These symptoms had continued for twelve months. Menstruation was regular, twenty-eight-day type, scanty, and accompanied by considerable pain. She was somewhat thin. The heart, lungs, and abdominal viscera were apparently normal.

Per vaginam.—The uterus was small, anteflexed, and movable. Tubo-ovarian swellings were present on each side, lying adherent in the pouch of Douglas, irregular in shape, and distinctly cystic to the touch. No leucorrhœa. The temperature was normal.

Abdominal section was performed January 21st, 1903. The great omentum was adherent at the brim of the pelvis. The tubes and ovaries lay at the bottom of Douglas's pouch, and were very adherent. They were removed in the usual way. The uterus was apparently healthy. No drainage was used. The wound was united in layers.

The patient made an uninterrupted recovery, and remains well. The lungs show no sign of tubercular disease (May, 1903).

Description of the specimen.—The Fallopian tubes and ovaries were firmly adherent to each other—the mesosalpinx being obliterated,—and covered by numerous peritoneal adhesions. The uterine end of each tube for $1\frac{1}{4}$ inches was the seat of interstitial salpingitis; beyond this point the tube became dilated and distended with pus. The walls of the tube were much thinned. The fimbriated extremity of each tube was occluded by perimetric adhesions.

Microscopic sections showed atrophy of the wall of the tube in its outer two thirds. The mucous membrane with the plicæ had almost entirely disappeared. The muscular coat showed round-celled infiltration, with scattered giant-cells. The right ovary was covered by dense adhesions and showed sclero-cystic oöphoritis, but no tubercular deposit. The left ovary contained a large hæmatoma of the size of a pigeon's egg, ruptured during removal. The pus of the Fallopian tubes was stained for tubercle bacilli, but none were found.

These two cases illustrate the chronic type of tuberculous disease of the Fallopian tubes. The affection of the tubes was *apparently* primary. It is possible that a tubercular focus was present elsewhere, but of this there were no clinical manifestations. In neither case was there any evidence of tubercular disease of the endometrium. A probable diagnosis of tubercular disease of the appendages was made before operation in each case, from the absence of any history of septic or gonorrhœal infection.

From the fact that no tubercle bacilli were found microscopically in the pus it is probable that the disease was not in the active stage. Inoculations into guinea-pigs were not carried out.

Mr. Alban Doran found that it was dangerous to amputate tuberculous tubes, as two stumps were left behind bearing ligatures; their tissue of necessity included tubercular elements, and secondary infection was not rare. In one of his own cases a large abscess developed, and the patient died after free discharge of pus through the lower angle of the abdominal wound. He knew of many equally bad cases, and therefore questioned whether it would not be better to remove the uterus with the tubes, or else to trust entirely to medication.

FIBROID TUMOUR OF UTERUS WHICH DEVELOPED AFTER BOTH OVARIES AND TUBES HAD BEEN REMOVED FOR INDEPENDENT DISEASE (DERMOID CYST).

Shown by Dr. Hey Groves.

History.—Woman aged 45, four children, last six years ago.

November, 1898.—Pelvic pain and abdominal swelling, caused by ovarian tumour. *Both ovaries and tubes removed completely.* Right ovary contained a unilocular dermoid cyst, and left ovary was cystic. Complete amenorrhœa followed for thirteen months.

December, 1899.—Bleeding occurred, lasting six days, with pain and clots. Periods then recurred with intervals of five weeks, then four weeks, and in 1901 three weeks, the length of period remaining six days. Pain very severe.

April, 1901.—Uterus, containing fibroid of about the size of small fœtal head, removed by abdominal hysterectomy. Mass removed weighed 1½ lbs., and was nearly spherical, measuring 3½ inches by 4 inches. A single, densely hard fibroid tumour occupied the posterior wall of the uterus. No trace of ovaries or tubes could be seen.

Patient made a good recovery, and is now healthy and active.

The formation and growth of the tumour and the establishment of menstruation after thirteen months' amenorrhœa, and in the absence of both tubes and ovaries, is very remarkable.

Dr. Peter Horrocks suggested that the first two specimens should be referred to the Pathological Committee. If the first specimen were a fibroid it would be interesting to find out, if possible, why it began to grow after removal of both ovaries, and the explanation would probably be the same as that in cases which grew after the menopause.

Report of the Pathological Committee on Dr. Hey Groves's Specimen of Fibroid Tumour which had developed subsequently to removal of both appendages.

We, the undersigned, have examined this specimen, which, however, has become too dried up from exposure to permit of a satisfactory microscopic examination.

To the naked eye it presents the characteristics of a fibro-myoma of the uterus.

T. W. Eden.
Ernest W. Hey Groves.
Cuthbert Lockyer.
G. Bellingham Smith.
J. H. Targett.
May 1st, 1903. Herbert R. Spencer, *Chairman.*

UTERUS AFFECTED WITH ADENO-CARCINOMA OF THE BODY IN AN EARLY STAGE, WITH MICROSCOPICAL SECTIONS.

Shown by Dr. Hey Groves.

History.—Virgin aged 49. Catamenia, twenty-eight-day type, lasted six days.

1899.—Periods prolonged to seven to nine days, with pain after the flow. This got worse until November, 1901, when bleeding lasted fourteen days each month, and pain and anæmia made patient a complete invalid. Uterus was explored and large mucous polypus removed from the fundus, and the cavity curetted by Dr. Griffith, who placed her under Dr. Hey Groves's care on her coming to reside at Clifton.

April, 1902.—Periods had rapidly increased after curetting, until they now lasted ten days, and were accompanied by much pain. Uterus was again curetted. It was enlarged and "bossy." Cavity bled very freely. About 1½ oz. of material in coarse fragments removed by the curette.

Report by Mr. Targett.—"Both fragments are affected with columnar-celled carcinoma of the villous type. The surface exhibits many papillary outgrowths, and here and there cysts are formed containing similar papillomata. The evidence of malignancy is found in the processes of epithelial cells, which are invading the muscular substance of the uterus. Many of the tubules are filled with mucoid secretion." Accordingly, on April 22nd, 1902, uterus was removed by vaginal hysterectomy. Patient made an uneventful recovery. Specimen was sent to Mr. Targett, who reported:—"The uterus as a whole is hypertrophied, which is partly due to the presence of many small fibroids in the wall. The lining of the uterus has a rusty colour from old blood-staining. At the fundus there are several ragged areas in the endometrium,

but little or no projecting growth. A section taken from one such area, and at right angles to the surface, exhibits tubular processes of columnar-celled carcinoma deeply infiltrating the muscular tissue. Some of the tubules form small cysts containing villous ingrowths, and in other places the cells are undergoing mucoid degeneration. Hence the condition exactly corresponds with that previously found in the curettings."

Dr. Herbert Spencer was glad that the second specimen was being referred to the Pathological Committee. From an inspection of the specimen and one of the slides he was not sure that the disease was not metritis and endometritis. In cases where there was little depth of growth he looked with suspicion upon the diagnosis of "carcinoma of the papillomatous type." In connection with Dr. Groves' first specimen he referred to the similar case published by Jacobs, in which the tumour grew and the patient became pregnant after two years' amenorrhœa following double oöphorectomy for fibroids. He had at a previous meeting given other particulars of this case (see 'Obs. Trans.,' vol. xliv, p. 247).

Report of the Pathological Committee on Dr. Hey Groves's Specimen of Carcinoma of the Body of the Uterus.

We, the undersigned, have examined this specimen and microscopical sections from it, and also of curettings from the uterus before removal, and consider it to be undoubtedly carcinomatous.

T. W. Eden.
J. S. Fairbairn.
Ernest W. Hey Groves.
Cuthbert Lockyer.
G. Bellingham Smith.
J. H. Targett.
Herbert R. Spencer, *Chairman.*

May 1st, 1903.

CASE OF UTERINE FIBROID REMOVED BY PAN-HYSTERECTOMY.

Shown by Dr. Walter C. Swayne.

Patient a nullipara, married, aged 29.

History.—First menstruation at seventeen, always painful; pain worse during last two years; for last two years increasing menorrhagia, and for last six months some irregular hæmorrhage, once a "flooding." About five months ago she noticed a swelling in hypogastrium, which rapidly became larger. She was brought to me by Dr. Bracey, of Wedmore, on account of the hæmorrhage, which had lately become profuse, and owing to which she was becoming progressively weaker.

On examination a rounded tumour was found rising into the abdomen, rather larger than the fœtal head at term; elastic, but felt solid, movable to a limited extent; cervix not soft, and movable.

On bimanual examination tumour felt to be continuous with cervix; sound passed over $3\frac{1}{2}$ inches; slight bleeding; uterine cavity empty. Operation advised on account of hæmorrhage and pain, which had been increasing during last month.

Panhysterectomy decided on, as tumour extended deep in pelvis. Dr. Bracey kindly assisted. Vagina sterilised, and fornices incised and bladder separated in lithotomy position. Patient then placed in Trendelenberg position and abdomen opened, omentum adherent to parietes causing some difficulty. Myoma screw inserted, but no efforts could drag the tumour through the incision. Left ovarian artery ligatured and divided, right clamped and divided, peritoneum incised around upper part of tumour and stripped up anteriorly and posteriorly (the cause of the fixation was not yet apparent).

The peritoneum being stripped off about two thirds of

the tumour, it was drawn out of the abdomen and the uterine arteries ligatured as soon as they came into view. The opening into the vagina in front had now been reached, and the separation of the tumour was completed by stripping off the peritoneum posteriorly.

The cause of the fixation was now found to be that both tubes were distended and densely adherent to the back of the broad ligament; both ovaries were also densely adherent, and buried in exudation. These were removed and the peritoneum united over a gauze pack placed in the vagina after the ligature of one or two small vessels in the cut vaginal edge.

The peritoneal cavity was now flushed with several pints of saline solution, and the abdomen closed by a continuous silk suture of the peritoneum and interrupted silk-worm gut sutures of the muscles, fascia, and skin.

The patient's condition had been rather alarming just before the saline irrigation, but improved markedly after it.

The operation occupied two hours and forty-five minutes. Thirty hours later her condition gave considerable anxiety; her pulse, never good, was increasing in rapidity and the temperature falling to 96·4°. Suspecting hæmorrhage, and after removing the vaginal pack without finding any, a stitch was removed and a sterilised glass catheter was passed into the pelvis.

Nothing passed into the catheter except a little blood-stained serum, even after attaching a syringe and drawing the fluid up.

Hæmorrhage being thus excluded, a funnel was attached to the catheter and the peritoneal cavity again irrigated with hot saline solution, of which about three pints was left in. Her condition now improved slightly.

Injections of strychnine and ether were administered at frequent intervals until, as the result of the former, slight twitching was noticed. By the next morning (twelve hours) the more alarming symptoms had passed off, though her condition still remained grave, and from this point she made a good recovery, except that towards the end of the

first week she had some elevation of temperature. On examination by the vagina (the wound healing well and looking healthy) its walls were found to be adherent at about the junction of the middle and lower thirds; on breaking this adhesion down with the finger about an ounce of rather offensive semi-purulent discharge escaped. The temperature fell, and her subsequent progress was uneventful.

At the first irrigation, at the end of the operation a few drops of fluid escaped into the vagina; at the second, at the end of thirty hours not a drop passed by that route, showing that the peritoneal cavity was completely occluded.

Dr. Heywood Smith asked why, in reopening the case, the abdominal route was chosen in preference to the vaginal, where the drainage could have been established more easily.

In reply, Dr. Swayne said that the vagina was not opened because the main arteries having been made extra-peritoneal by including them in peritoneum folded and sutured over them, and no hæmorrhage being apparent on removing the vaginal packing, it was supposed that the source of the hæmorrhage, if it existed, was from adhesions separated during the removal of the tumour.

CASE OF FIBROID OF THE VAGINA.

Shown by Dr. Walter C. Swayne.

Patient was a multipara aged 37. She was brought to me by Dr. Winterbotham, of Bridgwater, on account of a swelling protruding from the vulva, and sterility. The swelling was only noticed by her after long standing or straining. Menstrual history unimportant: no dysmenorrhœa or menorrhagia. Her last pregnancy was eight years ago. For the last six months she had noticed some vaginal discharge, which had lately been slightly offensive. For the last year there had been considerable dyspareunia.

On examination a hard, rounded, non-pedunculated tumour was felt projecting from the anterior vaginal wall. On slight straining it was forced out of the vagina, and the vaginal mucous membrane was seen to be ulcerated over its most projecting portion, while a considerable amount of the anterior vaginal wall was dragged down with it. The uterus was felt to be retroverted. A fortnight later it was removed; an elliptical incision was made, including the ulcerated patch of mucous membrane, and the tumour shelled out with the fingers, aided by a few touches with the scissors. Some hæmorrhage occurred, but not enough to cause trouble; three small vessels were ligatured. The vaginal edges were now trimmed up, as there was considerable stretching of the vaginal wall (the redundancy disappearing after the healing of the wound), and the incision united with silkworm-gut sutures. She made an uninterrupted recovery, and seven months later I heard that she was again pregnant and going on well.

The tumour is seen to consist microscopically of tissue in which the myomatous elements largely preponderate.

Dr. John Phillips ('Brit. Med. Journ.,' Feb. 24th, 1899, p. 262) has given a very complete account of these tumours, so that I need not refer to their origin and the other features of interest there described. This tumour had no connection with the cervix, but was simply and solely, as far as I could see, attached to and growing in the anterior vaginal wall.

Roger Williams ('Lancet,' 1899, vol. ii) regards them as derived from fœtal "rests," and states that they are usually preponderatingly fibrous in structure. This tumour is seen to consist microscopically of tissue in which the myomatous elements predominate very markedly.

FOUR CASES OF RUPTURED EXTRA-UTERINE GESTATION OCCURRING IN TWO WOMEN; REMOVAL BY ABDOMINAL SECTION; RECOVERY.

By A. J. Sturmer, Lieut.-Col. I.M.S.,

SUPERINTENDENT GOVERNMENT MATERNITY HOSPITAL, MADRAS.

(Received November, 1902.)

Cases of double ectopic gestation occurring in the same female are of sufficient rarity to merit a record (and this must be my excuse for introducing these cases to your notice). In the second case, as no embryo or chorionic villi were found, the objection may be raised that it was not an ectopic gestation; but I am unaware what other disease would cause a similar rupture without leaving a trace of its nature, and there was no apparent sign of disease. Probably if sections had been made of the tube, villi would have been found under the microscope. By some it may be said that the operations were not required, and that under "conservative" treatment the patients would have recovered. This objection would certainly not hold good in the fourth case, for hæmorrhage was continuing, and the patient became more anæmic during her stay in hospital, and in the second and third operations directly the clots were detached free oozing commenced; these clots might have become detached by some sudden movement of the patient under the "conservative" treatment.

In the 'Journal of Obstetrics and Gynæcology' for

August is a very interesting article by Dr. C. Lockyer on the treatment of this condition. I have performed laparotomy twenty times, with two deaths, for ectopic gestation. In one of the cases that died I kept the patient under observation too long; she was admitted with fever, and by the time I operated inflammatory changes had commenced within the abdomen. I am of opinion that laparotomy should be performed as soon as possible, and that the expectant line of treatment should not be considered. If you wait until you are compelled to operate you are placed at a greater disadvantage than if you had operated at once. Pus may be forming, or septic changes may have taken place. In three other cases I have performed colpotomy, with no deaths, and I much prefer the abdominal route. The pelvis of the native is small; it is more difficult to get at the parts, and you cannot cleanse the parts so thoroughly, or see if all bleeding has ceased. Dr. Lockyer quotes Scanzoni's figures for the "expectant" treatment of hæmatocele, and the stay in hospital of such cases is only 15·9 days. This seems a remarkably short time. I wonder if any of these cases returned to hospital and were treated under the head of pelvic abscess?

Tubal gestation ruptured; recent abdominal section.—S—, aged 23, native Christian, married twelve years, three children, last child aged two years and seven months, one abortion in 1893; admitted August 29th, 1897.

History.—On August 27th patient felt a severe pain in the lower abdomen, for which she attended the Dispensary of the Free Church Mission in Black Town, and received some medicine to be taken internally. The pain continued all day, and was so severe on the 28th night that she fainted. The next morning she was taken to the Royapuram Hospital in a very low condition, where Dr. Anna Church diagnosed the probable rupture of a tubal gestation of the left side. After remaining in hospital for a short time the temperature rose from 95·6° to 98·4° F., and her pulse improved sufficiently to allow of her

being conveyed to the Government Maternity Hospital, where she arrived about 4 p.m.

On admission she was quiet, temperature was normal, pulse about 110 and soft.

Per vaginam.—Cervix carried over a little to the right, rather soft. To the right of this a rounded swelling can be felt of about the size of an orange, quite low down (this turned out to be a blood-clot). The uterus appears larger than normal. To the left is a diffused swelling suggestive of fluid blood, and the same to a less extent behind the cervix, which, however, is not carried forward, but is more or less central. Dr. Church, who examined her on the 27th, states she found a cystic swelling in close connection with the left horn of the uterus, and no swelling on the right. The swelling has become more diffused since then. A diagnosis of ruptured tube with hæmorrhage into the peritoneal cavity was made by Colonel Branfoot, M.B., under whose care she was placed, and as the patient had rallied from the first effects of hæmorrhage and shock it was thought advisable to operate at once.

Operation.—Under A.C.E. mixture a three-inch incision was made in the middle line, and on opening the peritoneal cavity a quantity of fluid blood poured out. The fingers were passed in quickly and some blood-clots swept out, after which a finger was passed down to the left of the uterus, which was in the centre of the pelvis and free. A good-sized swelling was found to the left of the uterus; it was at once drawn forward, and found to be the ruptured left tube and ovary, with much clot around it. The tube and ovary were secured with four loops of No. 4 silk passed deeply in the broad ligament, and these structures cut away. Right tube and ovary were healthy. A large round clot lying on right side of pelvis was also removed. Abdomen was sponged out and closed with silk sutures, a long drainage-tube being left in at the lower part of the wound. During this operation the appendix cæci came prominently into view, and was found to measure over four inches and to contain a round worm, which could

not be pushed back into the gut and which seemed to be dead. An opening was made in the appendix and the worm drawn out. The appendix was then ligatured and removed, the peritoneal surfaces being drawn together over the end with a fine silk ligature.

Description of parts removed.—The tube is very much distended; it is small at the uterine end, then bulges out suddenly to a size a little larger than a large thimble. On the upper surface, at $1\frac{1}{2}$ inches from the uterine end in a straight line, is a tear, nearly one inch in length, through which a bag of membranes containing a curved embryo about the size of a damson protrudes. At the fimbriated end of the tear is a clot, which is detached with difficulty. This end of the tear is only about half an inch from the fimbriated extremity of the tube. The ovary is large, and contains a large corpus luteum, nearly an inch in length; there is a thick lining of a yellow colour, and the cavity contains watery fluid.

The notes of the previous history are wanting.

The patient went on well; the tube was removed after twenty-four hours, and the patient was discharged on September 25th, 1897.

She was readmitted under my care on March 27th, 1901, for pain in the lower abdomen, especially in the right side, and a red discharge from the vagina. Duration, ten days.

History.—Has had amenorrhœa for the past two months; last period in January. Periods are regular, lasting three days, and accompanied by no pain. She noticed a red discharge ten days ago; two days after the appearance of the discharge the pain commenced. She went to some dispensary in Black Town, where some medicine was applied to the uterus. A few hours after this she passed a small mass, like flesh, and the discharge was very profuse for two days. Passed also several clots. There was no milk in the breasts.

March 28th.—*Per vaginam,* a swelling on the right side

of the uterus, not very hard; does not go on to the pelvic wall. Red discharge on the examining finger.

Speculum.—No discoloration of the vagina, but the cervix is slightly discoloured. Sound passes to the left for nearly three inches; cavity dilated.

March 29th.—*Under chloroform.*—*Per vaginam*, an elongated swelling on the right side of the uterus, reaching as high as the anterior superior spine of the right ilium.

Operation.—Removal of ruptured extra-uterine gestation cyst, and radical cure of incisional hernia. There was a small hernial protrusion at the lower end of the old scar. An oval incision was made including the scar, and the tissues dissected up. At the site of the hernia, omentum was at once cut down upon. This was peeled off, tied, and cut away. On opening the peritoneum black blood welled up. A considerable quantity was sponged up and clots cleared away. The uterus was enlarged, and in front, and close to it on the right side, was the ruptured sac. This was brought to the surface. On removing the clots from the end of the tube smart bleeding took place. The broad ligament was pierced, ovary and tube surrounded by a double interlocking ligature and tied. Considerable time was spent in clearing the pelvis. The ring of the hernial tissues was next cut away and the parts cleared. Deep sutures of silkworm gut were passed through all the tissues, and there was a great strain on them; as it was, the inner parts of the incision barely came into contact. A litre of salt solution was injected into the rectum and retained.

Description of parts removed.—Right ovary considerably enlarged, and contained a very large true corpus luteum. Tube thickened and congested. The fimbriated extremity apparently adherent to the ovary, and a small cavity is formed about three quarters of an inch long between them. The end of the tube has ruptured, and attached to it a large clot of the size of a lime is adherent; on detaching this very active hæmorrhage took place. Chorionic villi cannot be made out for certain, and no embryo could be

discovered. This is no doubt a case of tubo-ovarian gestation. The end of the tube was adherent to the ovary, which formed one wall of the gestation sac.

The patient did well, and left the hospital with the external wound well united on April 12th, 1901.

Ruptured ectopic gestation.—R—, aged 35, Hindu, married twenty years, three children, last child aged ten years; admitted Feb. 20th, 1901.

Confinements natural. Menstruation commenced in her thirteenth year, regular, lasting two or three days; no pain; discharge scanty; no clots or shreds; no leucorrhœa. Last menstruated two months ago; flow lasted two days. Micturition is accompanied by a smarting pain for the last four days. Appetite bad for the last four days, and no motion for the same period. Has had no digestive derangement such as nausea or vomiting, nor any perversion of appetite. Always kept good health. She was employed in pounding rice on the evening of the 18th between 4 and 6 p.m. At 8 p.m. she was seized with an agonising pain in the lower part of the abdomen. It came on very suddenly, and from the first was of great intensity. Next morning she noticed uniform swelling of the abdomen, and the pain, which at first was confined to the lower abdomen, now became more general. There was no discharge from the vagina. The swelling has not increased or decreased in size. She was not sick, nor did she become giddy. Since coming to hospital the pain has been better.

On admission.—Patient is thin and ill-nourished, and wears a very anxious expression. Tongue quite white; conjunctivæ anæmic; palms of hands waxy-looking. Temperature, 99°; pulse, 140. Decubitus on one side, with both knees drawn up; breathes with some difficulty. Is not sick, and retains all her nourishment. Enema given and bowels acted. Abdomen uniformly enlarged; umbilicus at level of skin, $6\frac{1}{2}$ inches from right anterior superior spine, and $7\frac{1}{8}$ inches from left. Skin of abdomen shiny,

with numerous cracks; no enlarged veins or line of pigmentation. On palpation abdomen tender throughout; no hard masses made out, but the hand cannot be pressed in. A boggy sensation is imparted to the examining fingers.

On percussion the central part of the abdomen is resonant, the flanks are dull, and on being placed on her side the uppermost side becomes resonant.

Auscultation.—No friction-sounds or fœtal heart-sounds.

Breasts distended slightly. On pressure a drop of serous fluid exudes. No secondary areola.

She was kept quietly in bed under observation, and the pain slightly improved.

On the 22nd she was placed under chloroform and a vaginal examination made. The uterus was found large and pushed away to the left. To the right was a swelling which was diagnosed as a ruptured tube and blood, and so abdominal section was performed. Directly the peritoneal cavity was opened a great deal of dark fluid blood ran out. The right tube and ovary were brought outside, a good deal of clot being attached to them. A portion of this was separated, and at once oozing commenced from the torn tube. The broad ligament was pierced, and the tube and ovary encircled in a double interlacing ligature and tied; the parts encircled were then cut away. A great deal of blood had run back to the sides of the abdomen, and a considerable time was spent in removing this, the head of the table being raised to allow it to gravitate towards the pelvis. The uterus was considerably enlarged, and there was some lymph adherent to the fundus. The left ovary was healthy, *but the tube seemed very congested.*

Parts removed.—Right tube ruptured in the middle third; a large blood-clot attached to it. Chorionic villi found. Fimbriated extremity open, and a probe passed through it goes into the rent. A true corpus luteum found in the ovary of the same side. No embryo was discovered.

She went on well after the operation, and was discharged from the hospital on April 2nd, 1901.

R— was readmitted on July 2nd, 1902, complaining of pain on the left side of the lower abdomen, with occasional attacks of giddiness; duration of symptoms, twelve days. Since leaving the hospital in April, 1901, she has kept good health. Last menstruation two months ago.

Present state.—Fairly well nourished; looks very pale. On trying to walk feels very giddy; this feeling has become worse the last three days. No œdema; tongue pale; pulse 98, but volume good; temperature 99·4°.

On palpation the left half of the lower abdomen is extremely tender. A soft semi-fluctuating tumour is palpable on the left side; no hardening or movements felt. No ascites. There is dulness on percussion on the left side of the abdomen below the umbilicus, and well-marked dulness over the swelling.

Per vaginam.—Uterus lying back, but can be raised. Large tumour on left of uterus painful on pressure. Vaginal pulsation. Swelling seems to be very closely connected with uterus.

By speculum.—Slight pinkish discharge from uterus. Cervix blue and soft. Sound goes to the front, and the end of it can be felt a little to the right of the old incision; cavity seems dilated. Tumour closely connected with uterus.

Breasts.—No serous discharge can be expressed from them.

The patient was kept in the recumbent posture, and very quiet, but as she seemed to become more anæmic it was decided to operate. The pain, too, increased. At 7.30 a.m. on July 4th a rectal injection of beef-tea and Liq. Pancreaticus was given, and after thoroughly cleansing the abdomen laparotomy was commenced at 8.20 a.m. The old incision was opened up, as it seemed rather weak; the scar was very thin, and an incisional hernia would have formed in time. The omentum and gut were not adherent. On opening the peritoneal cavity dark fluid blood at once welled up, and

later bright blood was seen; evidently hæmorrhage was going on. Some clots and fluid blood were removed, and the left broad ligament seized with the finger and pulled up. A pedicle needle was passed through the ligament and the appendages tied in a double interlacing ligature. Before this was done an attempt was made to bring the tube and ovary to the surface; but from the tube, which was either split before or during the handling, very smart bleeding took place, and so the needle was passed. A pint of saline solution was run in under the left breast, as the patient was so pale. After tying the ligature the tube and a portion of the ovary were cut away, but as bleeding continued from the stump, and as a vessel was seen to be spouting near the uterine end of the tube, the pedicle needle was again passed under the former ligature and near to the pelvic wall, and another double interlacing ligature tied. Bleeding then stopped, and the parts encircled by the first ligature, together with it, were removed by scissors. The omentum, which was adherent to the tube and covered with black clot, was ligatured in sections and removed, a considerable amount being cut away. A good deal of blood had run up by the side of the spleen and liver, and this was removed by sponges. The uterus was large and lobulated; on the right side was a small pointed stump, the remains of the former tube. No signs of ovary or ligature was apparent. A litre of salt solution was injected into the rectum and the external wound closed in three layers, the two inner by fine silk, continuous, and the external by interrupted chromic gut. The patient bore the operation very well.

Parts removed.—Left tube and portion of left ovary; in the latter is a well-marked true corpus luteum. The tube has ruptured about its middle, a large ragged opening which admits the tip of the finger. The opening is surrounded by blood-clot, and chorionic villi are seen at the edge. The tube is much dilated from here to the extremity. The sac is very much thinned out; fimbriated extremity open. There is a well-marked outline of a sac

in the dilated portion of the tube. A round mass of about the size of a golf ball was found free in the pelvis; it is simply a mass of blood-clot, and no doubt filled the sac originally. Whether it was discharged from the sac before or during the operation is uncertain. Chorionic villi are attached to it. A minute embryo about a quarter of an inch long is seen near the opening; it is attached outside the ruptured tube. The patient recovered, and left the hospital on September 14th, 1902; but her recovery was retarded, first by an abscess forming at the site of the saline injection, which in the hurry was made *into* instead of *under* the breast—I was intent on the operation, and did not watch what was being done,—and secondly, the fine silk ligatures of the external wound set up irritation, and finally came away unabsorbed. This fine silk has always given me trouble, and since reading Mr. Barker's suggestion I have used nothing but Coats's cotton No. 40, with the best results.

Dr. Lockyer remarked that as Lieut.-Colonel Sturmer had referred to his article on "The Conservative or Expectant Treatment of Extra-uterine Pregnancy," he would like to make a few remarks upon the conclusions arrived at by the author of to-night's paper. In the first place he (Dr. Lockyer) felt that the thanks of the Society were due to the writer for his valuable contribution. Repeated tubal gestation is a rare condition. Many cases reported as such will not bear the test of criticism. Parry collected nine cases of its occurrence, but, valuable as his work was at the time of publication, there is no doubt that in the light of later knowledge he was too credulous in accepting the statements of authors without question as to their veracity. Dr. Herman published an authentic case in the 'British Medical Journal,' 1890, vol. ii, p. 722, in which he removed a gravid right tube which had ruptured in January, 1887; and on May 17th, 1890, he removed the left tube of the same patient for a similar condition. On page 46 of Lawson Tait's work on 'Ectopic Gestation' is found the record of another genuine case, where in 1885 Tait removed the right tube, which had ruptured, together with fœtus and placenta. Nearly three years later this same patient succumbed to an attack of internal hæmorrhage five hours after the onset of acute pain; and at the autopsy an ovum was found in the uterine segment of the left tube, and there was a rupture of the wall of the uterus, the cavity of which contained a decidua.

Dr. Lockyer stated that it was a matter for regret that the morbid tissues illustrating the author's cases were not forthcoming, especially as, in his opinion, the descriptions of the parts removed were somewhat vague, and not easy to follow. This was notably so in Case 2, *i. e.* of the parts removed at the second operation of Patient 1. In this instance the tube is described as thickened and congested, with its fimbriated extremity apparently adherent to the ovary, but a small cavity three quarters of an inch long is said to have existed between them. The end of the tube is described as the part which ruptured, and attached to "it" (presumably the rupture) was a large clot the size of a lime, on the removal of which very active hæmorrhage took place. It is further stated that the end of the tube *was* adherent to the ovary, which formed one wall of the gestation sac. From such a description it is possible to infer that gross changes due to salpingo-oöphoritis had taken place in the tissues concerned prior to impregnation, and that at the time of operation a paratubal hæmatocele was in process of formation. The symptoms in this case were—two months' amenorrhœa, a red discharge for ten days, and two days after discharge pain was complained of. A mass was passed during a profuse discharge which lasted for two days. There was no milk in the breasts. Now there was no urgency about these symptoms, and in his (Dr. Lockyer's) opinion there was no indication for an immediate laparotomy. The parts removed, it is true, may be regarded as diseased before the pregnancy occurred, but as far as the latter was concerned Nature was doing her best by the formation of an isolated hæmatocele over the site of the rupture in order to repair the accident. With such a pathological demonstration before the author Dr. Lockyer was surprised to find him making the uncompromising statement that in his (the author's) opinion "laparotomy as early as possible should be resorted to, and that *the expectant line should not be considered.*" The writer's argument that the free hæmorrhage which resulted on the removal of the clot by himself indicated the risk of accident is not valid, for such an accident would not happen if all the precautions enjoined by the "expectant treatment" were carried out. As Dr. Lockyer had elsewhere stated, in order to logically discuss the treatment of ectopic gestation and its relation to surgery, due regard must be paid to the various stages in the natural history of the condition. For unruptured tubal gestation cœliotomy must be performed as a prophylactic measure. A case of recent rupture must be taken on its merits; but, speaking generally, it would be right to follow the surgical canon for the treatment of primary hæmorrhage, and cut down and tie the bleeding point; but at a later stage, where the patient has recovered from the initial shock, and where a hæmatocele is in process of formation, or—as in the author's second case—had already formed, let Nature do

her perfect work,—for in the majority of cases it will be a perfect work, and the surgeon need not interfere until such time as absorption is delayed, or indications of infection of the clot appear. And in his (Dr. Lockyer's) opinion such accidents are less frequent than the opponents of the expectant treatment aver. Dr. Lockyer added that this conservative view had the support of such high authorities as Veit, Fehling, Martin, and Champneys.

Mr. Alban Doran considered that much more had to be learned about the nature and treatment of hæmatoceles and hæmatomas as the result of arrested tubal gestation. Champneys had shown that most undoubtedly these collections of blood, as a rule, disappeared if left alone. But when the collection was bulky the patient remained for weeks in peril. Mr. Doran related two cases recently under his own observation. A young woman was admitted into the Samaritan Hospital with a history of a missed period and abdominal pain; she was very anæmic, and a firm mass rose three inches above the pubes. A few days later she passed a perfect decidua, and at the end of a fortnight the mass was very small and firm. Another young woman was admitted under his care at the same time with a similar history; she too passed a decidua, but a fortnight later a large clot was expelled, with sudden, violent, crampy pains and collapse. Mr. Doran operated, and found the right tube distended with several ounces of old, brown clot, whilst over four pounds of dark red clot were removed from the pelvis. As the uterus and appendages were much altered by disease he amputated them. The patient rallied after transfusion, and was doing well. The lower limits of the collection of clot in this case formed a large convex mass behind the cervix—a symptom supposed to prove that there was a hæmatocele occupying Douglas's pouch. But although an inflammatory collection in the pelvic connective tissue did not form a convex mass behind the cervix, an intra-ligamentary tumour not rarely did so when it grew large so as to lie centrally in the pelvis; and Mr. Doran believed that a subperitoneal hæmatoma might do the same. The clot in his case lay under the broad ligaments. Diagnosis between hæmatocele and hæmatoma was not so easy as text-books led us to believe.

Dr. Herbert Spencer said that of the two points raised by the author the repetition of the ectopic pregnancy was the more interesting. He (Dr. Spencer) had met with repeated tubal pregnancy in two patients, both of whom recovered. In the first case he had the patient under observation in the hospital for two months on the occasion of the first pregnancy, and she recovered well in three months. Two years later she again became pregnant, and owing to the large size and slow absorption of the hæmatocele he removed the tube with a molar pregnancy in it; at the operation he found an old clot containing chorionic villi,

evidently the remains of the previous pregnancy. In the other patient he removed the tube on both occasions, there being an interval of two years between the pregnancies. On the second occasion this patient diagnosed her condition from the pain, and the patient was brought to a nursing home from Ealing and operated on the same night owing to a fresh hæmorrhage having occurred. The pain caused by the effusion of blood into the peritoneum was very severe in this case, and disappeared at once after the operation was performed. He had noticed the same severe pain in other cases of free bleeding into the peritoneum. With regard to the question of operating on early tubal pregnancy, there was no doubt that the great majority of cases got well without operation; they took much longer to recover, however, than cases operated on. The cases which urgently required operation were those in which bleeding was continuing, or in which the child was living, in which the pregnancy was advanced, or the hæmatocele infected, or from its size specially liable to become so.

Mr. Malcolm considered the question of operating for this condition one of the most difficult to determine. A complete cure might occur when a blood-clot formed and became sealed over, yet the surgeon must be prepared to deal with a fresh rupture. Recently the speaker had seen a case, and had arranged to operate. The patient was brought under immediate observation, and was kept quiet with a view to having the bowels cleared before the abdomen was opened. This patient, whilst under the best conditions possible, had a fresh hæmorrhage, with pain, vomiting, faintness, and a rise of pulse to 120. The question of performing the operation at once was contemplated, but this proceeding was delayed until the following day at the time previously fixed, when a considerable quantity of dark-coloured fluid blood was removed from the peritoneal cavity, together with a well-defined clot. Whenever a diagnosis of extra-uterine fœtation was made, if the child was believed to be alive the abdomen should be opened without undue delay; but in the earlier stages of the condition, if the child was believed to be dead it was hardly possible to lay down rules as to whether to operate or to wait. Each case must be treated on its merits.

A CASE OF HYDROSALPINX OF AN ACCESSORY FALLOPIAN TUBE DUE TO TWISTING OF THE PEDICLE.

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(Received December 15th, 1902.)

(With Plate III.)

During a recent visit to the museum of the Royal College of Surgeons my attention was attracted by a specimen consisting of a part of the Fallopian tube with a small cyst developed above it between the layers of the broad ligament. I had recently seen a good specimen of an accessory Fallopian tube, and there was something in the bud-like character of the little cyst, and in its situation, which suggested its derivation from such a structure.

It is doubtful if the existence of hydrosalpinx of an accessory tube has hitherto been proved. Kossmann has described under the name "hydroparasalpinx" certain small cysts of the broad ligament which he believes to be distended blind accessory tubes. These cysts differ from true hydrosalpinx in being sequestration cysts, not retention cysts, but I believe Kossmann's view of their origin is perfectly correct, though founded on insufficient evidence. I propose, therefore, to commence by giving a summary of his work on the subject. It will also be necessary to give a sketch of the anatomy of ordinary

hydrosalpinx in order to compare it with that of accessory hydrosalpinx. Lastly, I shall describe the present specimen in some detail, since it is, I believe, the first conclusive case on record. It differs from those hitherto described in that its lumen communicates with the main tube, so that, like the ordinary hydrosalpinx, it is a true retention cyst. In none of Kossmann's cases is there a communication with the main tube; they arose from blind accessory tubes, and a most important link in his chain of evidence was therefore missing. Moreover in none of them did he succeed in demonstrating plicæ and subplical lacunæ, such as are found in the present specimen.

Kossmann,* in a paper on accessory tubes and ostia, described the following cases in which these structures were associated with small cystic structures in the broad ligament. The description is summarised.

Case 1.—Operated upon for hæmatoma of the ovary. One cm. from the normal infundibulum is found a second nearly as large, only lacking the ovarian fimbria. In the *ala vespertilionis* is a cyst of the size of a small bean (the cyst does not appear to have been examined microscopically).

Case 3.—Operated upon for dermoid of the ovary. On the tube, 1·7 cm. from the normal ostium, is a group of four small patent accessory ostia. In the broad ligament, about 3 mm. away from the tube, are found two cysts of 3 mm. in diameter—one pedunculated, the other sessile. (No microscopical examination of the cysts recorded.)

Case 5.—Operated upon for ovarian cyst. On the tube are found five appendages. Three of them, about 3 cm. removed from the ostium, situated in a group together, have the form of stalked nodules, each of about the size of a split pea; one of them is roundish, the other two more flattened. They bear no fimbriæ. Halfway between

* Kossmann, 'Zeitschrift f. Geb. und Gyn.,' Band xxix, Seite 253.

them and the abdominal ostium are the other two appendages, which spring from a common base. One is an especially characteristic accessory tube, 9 mm. long, 2 mm. thick. Its free end bears fimbriæ. The other has an elongated conical form, is 12 mm. long, 7 mm. thick at the base; its blunt point bears no fimbriæ (see Fig. 1).

The spherical stalked nodule in Case 5 appears to have been the only one of these cysts examined histologically by Kossmann. He found in it a wide lumen with no secondary recesses; it was lined with cubical epithelium. The arrangement of the obvious muscular coat of this cystic structure and its association with a group of "undoubted tubal rudiments" left him in no doubt that he had to deal with cystic degeneration of an accessory tube.

Rokitansky has described isolated groups of fimbriæ and stalked appendages similar to the above, which he found near the parovarium, as derived from that organ. Kossmann is unable positively to disprove this possibility, but he meets the contention by emphasising the fundamental developmental differences between the Wolffian and Müllerian ducts, and the improbability that the former can give rise to accessory ostia resembling the Müllerian ostium.

Upon this evidence Kossmann arrives at the conclusion "that these stalked appendages of the broad ligament, whether they bear fimbriæ or not, are undoubtedly for the most part, and perhaps invariably, accessory tubes; we see that they are capable of a cystic distension, which one might call hydroparasalpinx, it being analogous to hydrosalpinx."

While Kossmann's contention is, I believe, absolutely correct, his proofs are very slender. The cysts he dealt with were very small (3 to 5 mm. in diameter), apparently spherical, and possessed none of the anatomical characters of hydrosalpinx, except that in the one case examined histologically a muscular wall and a lining of cubical epithelium were present. In no case could he demonstrate any trace of a communication with the Fallopian tube, so

that he was unable to disprove satisfactorily Rokitansky's opinion that the cysts originated in the parovarium. Indeed, Kossmann states definitely as one of the conclusions of his paper that accessory tubes never communicate with the lumen of the main tube—a statement which, if true, would favour Rokitansky's view of the origin of tubal appendages. It appears to me that Kossmann's "hydro-parasalpinx" was a piece of inconclusive pathological work, only holding the position of a highly probable theory.

I have been unable to find a satisfactory detailed description of the wall of a hydrosalpinx; it will therefore be necessary as a preliminary to consider some points in the anatomy of ordinary hydrosalpinx. A fact to be particularly noted is that the wall of a hydrosalpinx is thickest at the uterine end, and that its thickness progressively diminishes towards the ostial end. Correlated with this gradual attenuation of the wall there is a corresponding fibrous and hyaline tissue-degeneration.

A ribbon section, taken in the long axis of an incomplete hydrosalpinx (*i.e.* one which has not distended the tube right to its uterine end), shows the following changes:—At the uterine end of the hydrosalpinx, where the wall may be about a quarter of an inch thick, its structure is practically that of a normal Fallopian tube. By van Giesson's method the muscle stains a characteristic reddish yellow. The plicæ in section are well-developed branching structures, and are covered by a single layer of columnar epithelium, which often has not lost its cilia. Between the plicæ the epithelium has lost its cilia and has become cubical. All the nuclei stain well. A little further out, where the wall has diminished to one fourteenth of an inch in thickness, the muscular layers are still easily to be recognised. In their reaction to van Giesson's stain they resemble, however, fibrous tissue, staining bright red instead of the reddish yellow of normal muscle. The plicæ are seen as simple finger-like elevations, covered by epithelium no longer columnar, but cubical and non-ciliated. The wall between the plicæ has completely lost its epi-

thelial lining. The loss of epithelium, except on the plicæ, may thus be quite an early incident in the degeneration of a hydrosalpinx.

As the wall is traced still further towards the ostial end, the staining, both of the nuclei and of the ground-tissue, becomes fainter. The muscular layers are becoming converted into a hyaline, scantily nucleated tissue, and can be no longer clearly recognised as muscle, or distinguished sharply from the submucous fibrous tissue. The plicæ are smaller and have lost their epithelium, or are only covered by a layer of flattened cells, which may extend a little way along the wall on either side of the plicæ. A very striking fact is that the connective tissue of the plicæ has not shared to the full extent in the degeneration of the wall from which it springs. While the substance of the wall is scantily nucleated and badly stained, the plicæ springing from it may still show numerous well-stained nuclei, even if denuded of epithelium. This difference seems to be due chiefly to their greater vascularity. A well-formed vessel may usually be seen at the base of a plica, though there are very few vessels in the substance of the wall.

When the wall of the hydrosalpinx has diminished to about one twentieth of an inch in thickness, the plicæ, however, disappear altogether, and the wall consists simply of hyaline fibrous tissue, in which some trace of the original arrangement of the muscle in two layers still remains. But even beyond the point where the plicæ disappear there is one remaining feature which proves that this fibrous wall is a degenerate Fallopian tube. The last persisting relics of the original structure are the sub-plical spaces formed by the fusion of the tips of adjoining plicæ. These spaces may be found as elongated flattened lacunæ lying in the substance of the wall just beneath its inner surface. A characteristic large example of these spaces was about one fifth of an inch long by $\frac{1}{140}$ inch wide, but such a length is unusual. They may be lined with very flattened epithelium, or may be entirely devoid

of it. It is in this situation that the epithelial lining of a hydrosalpinx persists longest.

Finally the wall of the hydrosalpinx near the ostial end becomes in section a ribbon of hyaline fibrous tissue, smooth on its internal and external surfaces, and presenting no indication of its origin from a Fallopian tube.

Some of the characteristics of a hydrosalpinx are to be explained by the gradual increase in the size of the lumen of the normal tube from the uterine to the ostial end. When fluid is pent up in the tube its pressure acts at the greatest mechanical advantage in that part of the tube where such pressure can be brought to bear on the largest area, *i. e.* where the lumen is widest. Unless, therefore, the wall is much stronger where the lumen is wide than where it is narrow, it will begin to yield at the former point. It does not appear that the wall of a Fallopian tube is any thicker at its ostial than at its uterine end; sactosalpinx, therefore, nearly always begins at the ostial end, and the distension slowly extends to the uterine end of the tube. The transverse stretching of the tube is accompanied by longitudinal stretching, and as the broad ligament cannot elongate to a corresponding extent the tube becomes kinked, and the characteristic bent retort shape is produced. The commencement of distension at the ostial end accounts for the fact that the wall is attenuated and degenerate towards that end.

The sequence of degenerative changes seen in tracing a section of the wall from the uterine to the ostial end is a sort of cinematographic view of the changes that occur at each point of the wall from the time distension begins until it has reached its maximum. Probably in a very large hydrosalpinx no trace of tubal structure would be found. The above description was chiefly taken from a specimen of partial hydrosalpinx where the distension had only involved the outer portion of the Fallopian tube; in other words, the hydrosalpinx was still in course of formation.

To recapitulate—the most important points for my present purpose in the anatomy of hydrosalpinx are:

1. The diameter of a hydrosalpinx tends to increase from the uterine end to a point close to the ostial end.

2. The thickness of the wall of a hydrosalpinx gradually diminishes from the uterine to the ostial end.

3. The epithelial lining of a hydrosalpinx disappears early except on the plicæ and in subplical spaces.

4. The plicæ are very persistent structures. Owing to their vascularity they resist degeneration longer than the wall at the point where they arise, and their nuclei stain well after those of the wall at their base have become scanty and degenerate.

5. Even after the plicæ have disappeared and the wall has become entirely fibrous, its nature may be recognised by the presence in it of subplical spaces, represented by flattened lacunæ, sometimes lined by flattened epithelium.

The specimen I propose to describe to-night is No. 4582 in the pathological series of the Museum of the Royal College of Surgeons. It is described in the catalogue as follows:

"4582. A thin-walled pyriform cyst, developed under the broad ligament at the point where it is reflected over the Fallopian tube."

The specimen was presented by Mr. Lawson Tait. It formed one of a series of specimens by means of which Mr. Doran in 1883 succeeded in showing that some broad ligament cysts do not originate from the parovarium.* I am indebted to Mr. Shattock for permission to make a further examination of the specimen. It consists of the outer portion of a Fallopian tube, about 2·5 cm. in length, to the upper border of which the cyst is attached. The ring of fimbriæ is well developed; the ostium is patent but is rather small, admitting an ordinary surgical probe. It is situated excentrically within the ring of fimbriæ, near the upper edge of the ring. Attached to the inferior border of the tube is a small portion of the broad ligament.

* "Incipient Cystic Disease of the Parovarium and Broad Ligament." 'Trans. Path. Soc.,' vol. xxxiv, p. 169, and pl. lxi, fig. 2.

The specimen shows no signs of inflammatory processes of any kind, either in the form of adhesions or thickening of tissue.

Attached almost vertically to the upper border of the tube, 1 cm. from the ostium, is a small pear-shaped cyst. Its long diameter, which is slightly concave on the side which looks towards the uterus, runs upwards and outwards from the upper border of the tube, forming with it on its uterine side an angle of about 120°. Beyond the attachment of the cyst the Fallopian tube curves downwards to the ostium. The maximum diameters of the cyst are 2·2 cm. by 1·4 cm.; the maximum transverse diameter is near the free end. The stalk by which it is attached to the tube is extremely short, measures 4 mm. across, and on the reverse aspect of the specimen is seen to have undergone twisting through perhaps 180°. The cyst is covered by smooth peritoneum quite free from adhesions, and the peritoneum of the tube adjacent to the cyst shows no sign of having been pulled upon by the growth of the cyst. A slight constriction runs round the cyst just below the equator of its long axis.

On opening the cyst its wall is seen to be 1·5 mm. thick at its attached end; rapidly thinning, however, it becomes more and more attenuated, until at the free pole it is only 0·3 mm. thick. As seen from within, its upper pole forms a rounded concavity, while its lower pole is a funnel-shaped depression apparently running to a point. Branching fibrous-looking bands standing out in relief, and for the most part running in the long axis, divide the internal surface into shallow unequal loculi like those of an ordinary hydrosalpinx.

A small blow-pipe was introduced into the uterine end of the tube while the specimen was under water, and when air was blown into the same tube bubbles escaped freely by the ostium. When the ostium was closed by the pressure of a finger the tube became distended, and a stream of fine air-bubbles escaped from the tube into the interior of the cyst.

DESCRIPTION OF PLATE I,

Illustrating Dr. Blacker's specimen of a Uterus removed by Vaginal Hysterectomy fourteen days after Curetting and Steaming.

FIG. 2.—Section of scrapings from uterus showing numerous tubular glands and masses of cells of ? malignant nature.

FIG. 3.—Section from upper part of uterine cavity. Shows layer of feebly staining structureless tissue infiltrated with leucocytes, containing a few spaces without epithelial lining, the remains of (?) glands and remains of mucous membrane.

Fig. 2.

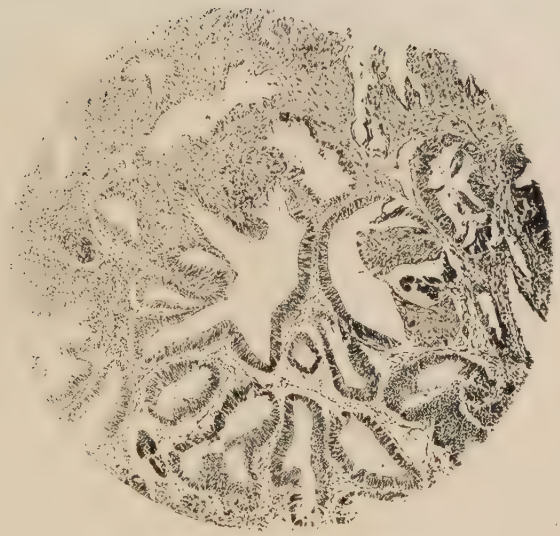

Fig. 3.

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DESCRIPTION OF PLATE II,

Illustrating Dr. Blacker's specimen of a Uterus removed by Vaginal Hysterectomy fourteen days after Curetting and Steaming.

FIG. 4.—Section through middle part of wall of uterine cavity. Shows entire destruction of whole of mucous membrane and of superficial layers of muscular tissue. Large vessels can be seen almost at the free edge of the section.

FIG. 5.—Section through upper part of cervical canal and lower part of cavity of uterus. Shows destruction of mucous membrane and an entire absence of glands and lining membrane.

Fig. 4.

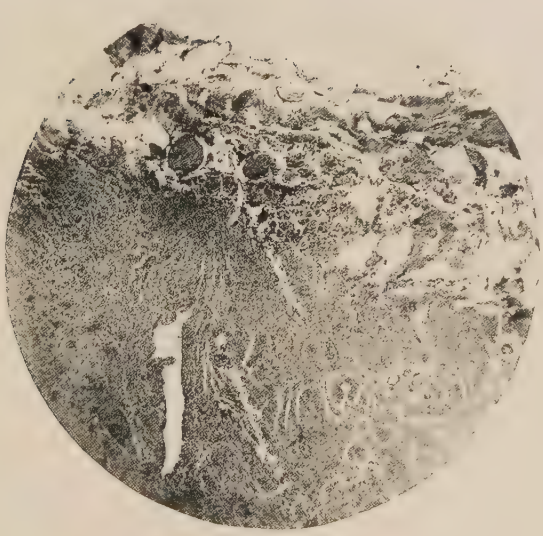
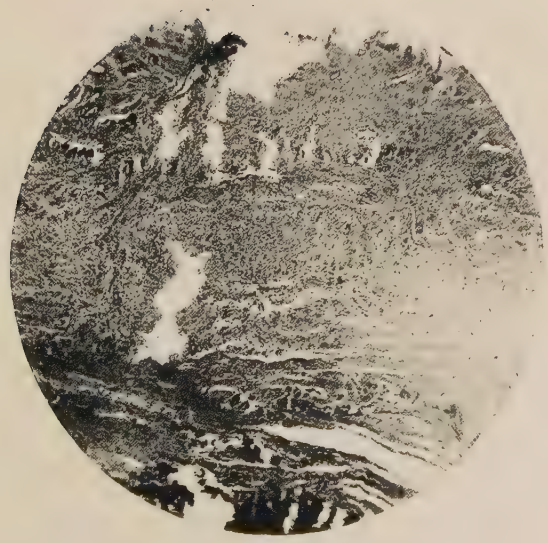


Fig. 5.



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DESCRIPTION OF PLATE III,

Illustrating Mr. W. S. Handley's paper on Hydrosalpinx of an Accessory Fallopian Tube.

Fig. 1 (from Kossmann).—The tube and its appendages from Case No. 5, described by Kossmann. A is the spherical cystic nodule (hydroparasalpinx) examined microscopically by Kossmann.

Fig. 2.—Specimen No. 4582, Path. Series, R. C. S. Museum. Natural size. A, abdominal; B, uterine end of portion of main Fallopian tube; C, cut edge of broad ligament; D, hydrosalpinx of accessory tube in longitudinal section, showing its interior; E, its short, twisted pedicle.

Fig. 3.—Section of wall of hydrosalpinx of accessory Fallopian tube near its attached end. Below for a short distance is seen the peritoneal covering; next the muscular layers forming the greater part of the thickness of its wall. Internal to the muscle is the fibrous subepithelial layer. The epithelium has disappeared from the inner surface, though traces of it may be seen. The plica (A), as contrasted with the wall from which it springs, is deeply stained and richly nucleated.

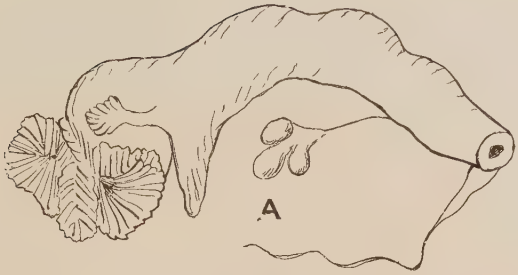

Fig. 1.

Fig. 2.

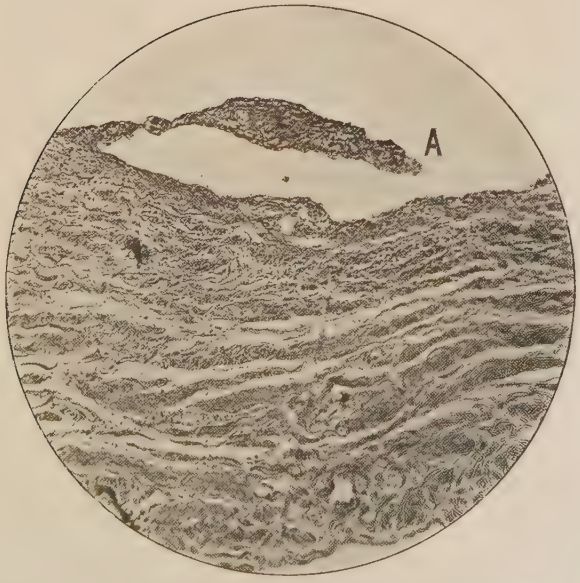

Fig. 3.

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Microscopical sections have been cut of a strip of the wall of the cyst 30 mm. long, commencing at the attached pole of the cyst and extending nearly to its free convex end in the longitudinal axis. At its base the section is 1·5 mm. thick, tapering off distally to a thickness of 0·3 mm. In a section stained with eosin and hematoxylin, Mr. Shattock pointed out that while at the thick end of the section the neuclei and ground-tissue are well stained, at the thin distal end hardly any nuclei are visible. In this situation the wall, while retaining the general arrangement of its layers, has a hyaline appearance.

The layers visible along the whole length of the section are from without inwards—

1. A thin, tortuous, fibrous-looking lamella, showing an occasional nucleus—the peritoneum.

2. A well-developed muscular layer consisting of alternating layers of longitudinal and circular unstriated muscle. The arrangement of the muscular layers is irregular, and they appear to interlace. In places three layers are visible, an outer and inner longitudinal and a middle circular layer. At other points as many as eight alternating layers are traceable.

3. A thin layer of fibrous tissue, representing the submucosa.

4. Most internally an imperfect granular layer, absent at the distal end, containing stained points which appear to be broken-up nuclei. In places the free border of this layer shows vertical striation.

Sections at different points show certain peculiarities. Near the proximal end of the section there is a considerable amount of fibrous tissue between the muscular bundles. The nuclei of the circular muscle coat are well stained. Here also are seen several sections of atrophied plicæ, exactly resembling those of an ordinary hydrosalpinx. They are bare of epithelium. The plicæ are seen as finger-like processes of vascular and richly nucleated fibrous tissue containing obvious blood-vessels.

At one point there is visible one of the flat lacunar

spaces which represent the interval between two plicæ conjoined at their edges. The characteristic point about these subplical lacunæ, which proves them to be of the nature I have indicated, is that the floor of the lacuna is on a level with the general internal surface of the hydrosalpinx, so that the lacuna itself is situated within an inwardly projecting convexity of the floor of the cyst. Another proof of their nature is afforded by comparing two of my sections cut from the same block. In one of these two small separate plicæ are seen close together; in the other, at a corresponding point along the length of the section, is a convex elevation containing a subplical space.

About midway along the length of the section the layer of *débris* representing the epithelial lining is best developed. At one point the one-twelfth objective shows a distinct row of columnar cell-outlines, each with a definite nucleus and possessing doubtful cilia.

At the distal end of the section the epithelial *débris* is absent, and the submucous coat is represented by a thin fibrous band. The muscular layers are still distinct.

There is no need to labour the obvious fact that this cyst is a miniature hydrosalpinx complete in every detail, except that it lacks the dimple which often represents the closed ostium at the distal end of an ordinary hydrosalpinx. The shape of the cyst, like a pear or the body of a retort, the progressive thinning of its walls as they reach their maximum diameter, with a corresponding tissue-degeneration, the imperfect loculation of its interior, the muscular structure of its walls, and the presence of traces of a columnar epithelium, are almost sufficient to show its nature. But the presence of plicæ and subplical spaces, which so far as I know are structures quite peculiar to the Fallopian tube, sets the matter beyond a doubt, even if no communication with the interior of the tube had been demonstrated.

The only other possible explanation of the cyst would be as a distension sacculus of the Fallopian tube. But the anatomical characters of the cyst are entirely unlike

those of any distension sacculus I have ever seen, especially in that it possesses a distinct short stalk, traversed by a minute channel. Besides, the abdominal ostium of the tube is patent, so that there can have been no undue pressure within the tube to produce such a sacculus.

I fear I have detained the Society a long time about a specimen of slight clinical importance, and I can imagine some of the members saying, "*Parturiunt montes, nascetur ridiculus mus.*" But the specimen is not, I think, quite devoid of clinical interest, though unfortunately its history is lost. If hydrosalpinx of an accessory tube occurs, so may pyosalpinx. An accessory tube distended with pus would seem more likely to burst than the stouter main tube, so that the presence of one of these accessory tubes might conceivably lead to a fatal result. It therefore seems advisable to ligature and remove an accessory tube, should one be met with incidentally during the course of an operation.*

Moreover this cyst, though communicating with the tube, is in a sense a broad ligament cyst. I do not think the presence of plicæ and subplical spaces has previously been described in such a cyst, and the main interest of the specimen lies in the light it promises to throw on the origin of broad ligament cysts in general.

This paper is really intended as a communication preliminary to one on the origin of broad ligament cysts. My investigation of the subject is as yet incomplete, but I have already found plicæ in other broad ligament cysts, and I believe I shall be able to convert Kossmann's hypothesis into something approaching a proved fact, by showing that in many cases such cysts originate from "rests" of the Fallopian tube.

Mr. Alban Doran congratulated Mr. Handley on his judicious criticism of current ideas concerning the origin of new growths in the region of the broad ligament and Fallopian tube.

* Since the above was written, a case of pregnancy in an accessory tube has been recorded by Demons and Fieux ('Annales de Gynécologie et d'Obstétrique,' October and November, 1902).

Kossmann's theory was of great importance; perhaps he was not strictly accurate when he implied that parovarian cysts and papillary cysts of the broad ligament all arose from tubal or Müllerian elements and not from relics of the mesonephron, but he was very possibly correct in ascribing the abundant free papillomata which sometimes buried both broad ligaments, tubes, and ovaries, to tubal elements. If that view were correct it might account for the clinically innocent character of many cases of bulky, free papillomata, notwithstanding formidable complications, which vanished when the growths were removed. The masses were hypertrophied tissue rather than neoplasms. Mr. Doran removed a very heavy pair of such outgrowths, which nearly filled the abdomen, nine years ago, and the patient remained well. He asked Mr. Handley if it were really justifiable to amputate a tube and mesosalpinx solely because accessory ostia and tubes were detected. Mr. Doran admitted, however, that these little growths were probably more than pathological curiosities, so that it seemed prudent to close an accessory ostium by suture of the adjacent serous membrane, and to amputate accessory tubes.

Dr. Herbert Spencer did not think that it had been proved that the specimen shown was an accessory tube; he thought it was more probably an "antrum tubæ"—a saccular dilatation of the tube in the situation of the specimen shown described by Rœderer in 'Icones Uteri Humani Gravidi,' and figured in Montgomery's 'Signs and Symptoms of Pregnancy.' The "antrum" was not mentioned in modern books. Rœderer asked whether it was not produced by pregnancy; but Montgomery showed that this was not the case by finding it in unimpregnated uteri. He (Dr. Spencer) had found it in pregnant cases; but it was much more often absent. The "antrum" contained plicæ, and, of course, was of the same histological structure as the tube, so that Mr. Handley's specimen could not be said to be a tube as a result of the histological evidence. It was pure hypothesis that the "accessory tube" had been closed by inflammation, and there was an absence of epithelium on the so-called plicæ in the specimen. It was, however, well known that an accessory *ostium* with perfect fimbriæ was not rarely met with in this situation, and he thought both the antrum and the accessory fimbriated ostium were due to some developmental peculiarity. But he thought they might ask Mr. Handley to produce a tube of approximately the shape of the normal "tube" before they spoke of an accessory tube; the sketches showed structures bearing a very remote resemblance to "Fallopian tubes." He would suggest that further investigation should be made into the subject of the "antrum tubæ," a suggestion first made by Rœderer himself—"ulteriori indagine ista antra non indigna esse mihi videntur."

Mr. Malcolm thought that Mr. Handley had proved that the cyst he described was a dilated accessory Fallopian tube. The fact that layers of peritoneum, muscle, fibrous tissue, and *débris* representing mucous membrane were found in the wall of a cyst which communicated with the tube seemed quite conclusive evidence. Mr. Handley would strengthen his argument if he could show that some of the closed cysts which seemed similar to the one described had also the various layers of tissue in their walls which are found in the Fallopian tube. The speaker was much interested in the description of the microscopic appearances of the wall of an ordinary hydrosalpinx. The condition suggested to him that in the normal tube towards the fimbriated end the flow of its contents was probably towards the peritoneal cavity. The secretion of the tube (for it must have a secretion or there could be no hydrosalpinx) and effete epithelial cells cast off from its mucous surface would, if near the free end, find an easier exit towards that end than towards the uterus. The readiness with which an extra-uterine fœtation near the fimbriated extremity may be expelled into the peritoneal cavity was further evidence to the same effect. It followed that if any slight inflammation closed the fimbriated extremity of the tube, the contents of the external portion, which were accustomed to flow outwards into the peritoneal cavity, would be able to escape only through the uterus; and if the muscular power were insufficient to propel the contents forward, a hydrosalpinx would develop. The condition described by Mr. Handley, with the thinner walled part near the fimbriated extremity of the tube, would follow.

Mr. Handley thanked the Society for the patient hearing it had given to a paper necessarily full of detail. He thought Mr. Doran had in one particular misunderstood him. He did not wish to advocate removal of the adnexa when an accessory Fallopian tube was found upon them, but only the removal of the accessory tube itself. He regretted he was not acquainted with the description of the "tubal antrum" referred to by Dr. Spencer, whose criticism assumed the identity of the "tubal antrum" with the cyst described to-night. If this were so, then he would regard the "tubal antrum" as an accessory hydrosalpinx.

MAY 6TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—33 Fellows and 7 visitors.

Books were presented by the Society of the New York Hospital, the Johns Hopkins Hospital Staff, and Dr. Blacker.

Alex. Wathen Nuthall, F.R.C.S.Eng., was declared admitted.

The following gentlemen were elected Fellows of the Society: — William Nolan, L.R.C.P.&S.I., L.M.Dubl.; Henry Thomas Hicks, F.R.C.S.Eng.; Robert Adrian Ironside, M.D., C.M.Aber.

AN UNUSUAL CASE OF INVERSION OF THE UTERUS.

Shown by SIDNEY BOYD, M.R.C.S., L.R.C.P. (introduced by Dr. Amand Routh).

MRS. M—, aged 29, was admitted into Charing Cross Hospital on March 6th, 1903, under the care of Dr. Amand Routh, for inversion of the uterus.

History.—Patient has been married seven and a half years and has had two children, the first in 1898, the second on September 27th, 1902. The first delivery was natural, the second instrumental. On the latter occasion the birth of the child was followed by profuse hæmorrhage, and as the placenta did not come away Dr. Michie, the patient's doctor, peeled it off by hand, after which the uterus contracted and retracted efficiently and the hæmorrhage ceased. The uterus after removal of the placenta presented nothing indicative of inversion, as ascertained by external and internal examination. The patient was a good deal exhausted from loss of blood.

During the next fortnight the patient suffered from "after-pains," anorexia, vomiting, and weakness. The vomiting at the end of the first week was so severe that rectal feeding was practised for two days. The lochial discharge was more profuse than usual, and lasted fourteen days. She was given a mixture of ergot and strychnine from the first. The uterus was examined once *per vaginam* during this time and nothing abnormal discovered. There was a little pyrexia during the first fortnight of the puerperium, and slight phlebitis developed in both legs, which soon disappeared.

Convalescence was slowly established, and she got up at the end of October. During November, December, and part of January the patient had some white or slightly blood-stained discharge, but no pain or hæmorrhage. At the end of January patient began to lose freely again, and when examined by her medical attendant on February 4th the uterus was found to be completely inverted. An attempt was made to replace the uterus by means of repositors, but this was unsuccessful, as it was found impossible to devote the necessary attention to it in the patient's home.

When admitted to the hospital on March 6th patient was very weak and anæmic; pulse was very small and feeble—88 to the minute; temperature was raised about one degree above normal; she was losing freely.

On examination under an anæsthetic a rounded tumour of the size of a hen's egg was found in the upper part of the vagina; traced outwards the neck of the tumour passed just inside the cervix, which was greatly distended and hardly appreciable.

No fundus could be felt in the usual situation on bimanual examination.

The tumour was drawn down by the finger outside the vulva, and at each inverted cornu, symmetrically placed, were found the orifices of the Fallopian tubes, along which a probe could be passed. There was no fibroid present.

Aveling's repositor was used off and on for nearly a week for some hours daily, and on each occasion the fundus was found to be pushed up inside the cervix, but would go no further. Galabin's modified form was finally substituted, and with the help of two small hypodermic doses of morphia the patient was able to bear the instrument for nearly forty-eight hours. At the end of this time the fundus was found to be completely reduced. An intra-uterine douche was given, and the uterine cavity packed with iodoform gauze. A small portion of the gauze was removed each day, and the patient was left in bed for a fortnight.

The uterus was then found to be in a retroverted position, but was easily replaced. The sound passed 2½ ins.

Remarks.—Two explanations of this case are possible. Either she had a partial inversion during the third stage of labour, which became suddenly complete four months afterwards; or, which is less likely, the inversion began spontaneously four months after labour. If the former, which seems the more probable, be the correct explanation, the absence of symptoms except leucorrhœa during the three and a half months following the cessation of the lochia is a very unusual history.

The reposition took a long time, but eventually succeeded, and the result has been good.

The case thus bears out Dr. Routh's statement in a

clinical lecture at the hospital that, provided the repositor could be used with such watchfulness and opportunity as can be afforded in a hospital, no need for hysterectomy or other operation would arise.

Dr. Galabin said that he had met with one case of inverted uterus in which it was never discovered at the time of delivery that anything had gone wrong. The patient had no hæmorrhage so long as she suckled her baby, which she did for eight or nine months. As soon as she weaned the baby, not only menstruation returned, but irregular and severe hæmorrhage, so that she became excessively blanched. The inversion was then discovered, and was restored by Aveling's repositor.

Dr. Amand Routh drew attention to the entire absence of symptoms from the end of the second week to the fourth month; and this made the case a very interesting one, for nothing was less expected, when hæmorrhage suddenly appeared at the fourth month, than to find a complete inversion of the uterus, which was known to have been absent at the end of the puerperium.

TWO CASES OF FIBRO-MYOMA OF CERVIX TREATED BY ABDOMINAL HYSTERECTOMY.

Shown by Dr. Walter Tate.

The first specimen was removed from a single woman aged 25, with the following history:—Menstruation began at the age of fifteen, was regular, and normal in amount. Eighteen months ago she began to have pain in the lower part of the abdomen; at first the pain was felt chiefly at night; latterly it has also caused trouble during the day. For the past year sleep has been greatly disturbed. Patient has noticed herself getting stouter for six months past, and a month ago a tumour was discovered by her doctor. There has been some frequency of micturition, and also increasing constipation during the last three months.

On examination patient is a fairly healthy-looking young woman. A rounded firm tumour can be felt reaching up to within an inch of the umbilicus. The surface of the tumour is nodular. The vagina is greatly encroached upon by the lower pole of the mass, which depresses the vaginal roof and descends to within $1\frac{3}{4}$ inches of the vulva. The vaginal portion of the cervix is obliterated, and the os is situated high up and displaced to the left.

Abdominal hysterectomy was performed on November 20th, 1902. On opening the abdomen the body of the uterus was seen perched on the top of the tumour, and lying to the left of the middle line. The tumour had pushed up the bladder and had burrowed very extensively beneath the peritoneum of both broad ligaments, and also into the cellular-tissue space between the bladder and cervix. The vesico-uterine folds of peritoneum were greatly stretched. After removal of the tumour a large cavity was left in the right broad ligament. This was drained *per vaginam,* and the peritoneum was completely closed over the cavity. The right appendages were left, but it was found necessary to remove the left appendages.

The tumour removed measured $6\frac{1}{2}$ by $4\frac{1}{2}$ by 4 inches, and weighed $2\frac{1}{2}$ lbs. The body of the uterus was of normal size. The portion of cervix removed with the tumour measured two inches in length. The tumour grew from the anterior and lateral aspects of the supra-vaginal cervix, and had not encroached on the vaginal portion.

The second tumour exhibited was removed from a patient aged 29 years. The patient, who was unmarried, first noticed a lump in her abdomen in July, 1902, at which time she was living in India. The swelling steadily increased, and as she was suffering from discomfort and frequency of micturition she consulted Dr. Waters at Massouri. He discovered that she had a tumour, and advised her to return to England for operative treatment. Menstruation was quite regular, but scanty.

On examination the tumour reached halfway between

the pubes and umbilicus; it was quite hard on palpation. The cervix could only be reached with considerable difficulty, and the external os was opposite the upper end of the symphysis pubis. The tumour formed a solid, fixed mass, bulging down the posterior vaginal wall and reaching to within 1½ inches of the vulva.

Abdominal hysterectomy was performed on November 7th, 1902. The tumour was found to have grown down between the vaginal wall and peritoneum of Douglas's pouch, and required to be enucleated from this situation. The cavity left after enucleation was drained *per vaginam*, the peritoneum being entirely closed over the stump.

The tumour, which measured 5 by 5 by 4 inches, was seen to grow from the posterior wall of the cervix, which was somewhat lengthened. The body of the uterus was seen as a distinct projection rising from the summit of the tumour, and was of normal size.

These two tumours are examples of fibroids of the cervix comparable to subperitoneal outgrowths from the body of the uterus. In neither case had they grown in the substance of the cervix causing great enlargement of this part. This accounts for the vaginal portion of the cervix showing no enlargement, and possibly for the absence of any hæmorrhage in these cases.

THREE FIBROID TUMOURS OF CERVIX UTERI.

Shown by Dr. Galabin.

Dr. Galabin showed three fibroid tumours of the cervix uteri removed by abdominal panhysterectomy.

The largest, weighing 3 lbs. 6½ oz. after shrinking, was removed from a patient aged 27. She had had one

child thirteen months ago. Two and a half months later she became pregnant again, and during her pregnancy suffered from retention of urine, requiring the catheter. She miscarried at four and a half months, and the tumour, partially obstructing the pelvis, was then detected. There was no menorrhagia. The tumour reached up to the umbilicus, and descended low behind the cervix towards the perineum. The sound passed five inches. Both ovaries were removed with the uterus on account of the very long pedicle which the leaving of an ovary would have necessitated. Though uterine and ovarian arteries were well secured, hæmorrhage made it necessary to remove and replace the plug twenty-four hours after the operation. It appeared to be due to general oozing from the cavity in the cellular tissue, and was arrested by tighter plugging.

The second tumour, weighing 2 lbs. 13 oz. after shrinking, was removed from a patient aged 44. She had one child, twenty-two years ago. Menses were irregular, not excessive, less frequent than normal. She had had pain in the left side for five months, had noticed the tumour four months. For four months micturition had been increasingly difficult, and for the last two weeks she had had retention of urine, requiring the catheter. The tumour formed an abdominal mass as large as a five months' pregnancy, and the sound passed five and a half inches in front of the mass. In this case the right ovary was left, notwithstanding the long pedicle, which was thus rendered necessary.

The third tumour, weighing 1 lb. 15 oz., was removed from a patient aged 55. She had had four children, one of which weighed 13 lbs. at birth; the last twenty-four years ago. The menopause occurred two years ago, at the age of 53. From the age of 45 to 53 she had prolonged periods, with short intervals. Enlargement was noticed from the age of 45. For the last two years, commencing about the time of the menopause, she had had increasing difficulty of micturition. There were repeated

attacks of retention, requiring the use of the catheter and leading to cystitis, with severe pain. In consequence of the menopause having passed, Dr. Galabin was reluctant to operate, and watched the patient for a year, during which the difficulty of micturition increased and the tumour enlarged, the length of the cavity increasing from $4\frac{1}{2}$ to $4\frac{3}{4}$ inches.

In this case both ovaries were removed with the uterus. After the operation cystitis occurred, with alkaline urine containing pus. Some leakage of a ureter began ten days after the operation. After ceasing and recurring, it finally ceased spontaneously.

In all cases the recovery was smooth constitutionally, temperature not rising to more than about 100°. In all three the tumour was in the posterior wall of the cervix, growing chiefly externally, and descending behind far below the level of the external os. In all it was in close relation to the rectum, from which there was a difficulty in separating it, the pouch of Douglas being elevated above the top of the tumour. In all three the small normal fundus was recognised on the top of the tumour.

Formerly Dr. Galabin had performed oöphorectomy in such cases, since it was in them an easy operation, while hysterectomy was difficult. Later he had come to the conclusion that hysterectomy could be performed in all cases, and was a more certain cure. He thought that the fact that in one of these cases the symptoms had come on only after the menopause, with increase of the tumour, supported this conclusion.

The indication for the operation was in all the cases mainly retention of urine, and in none of them hæmorrhage. In one only of the three excessive hæmorrhage had occurred in former years.

Dr. Galabin thought that it was a point in favour of doing panhysterectomy by separating from above instead of from below, as in Doyen's operation, that it was applicable to cases like these. In all of them the tumours could only be pulled up out of their incarcerations in the

pelvis after they had been enucleated from cellular tissue in front as well as at the back, the ovarian arteries having been tied and divided. The main difficulty of the operation was overcome when the posterior vaginal fornix, which was separated from the pouch of Douglas by five inches or more of tumour, could be reached.

FIBROID TUMOUR OF THE UTERUS, WHOLLY CERVICAL, FORMING AN ABDOMINAL TUMOUR, AND CHARACTERISED BY PROFUSE HÆMORRHAGE.

Shown by Dr. J. S. Fairbairn.

This specimen is a good example of cervical fibroid forming an abdominal tumour and causing marked distortion of the cervix, while leaving the uterine body unaffected. It is further of interest from the very profuse and dangerous hæmorrhage to which it gave rise, and which rendered operative treatment a matter of some urgency.

It weighs 3 lbs. 5 oz., and measures $7\frac{1}{4}$ by $4\frac{1}{4}$ by 4 inches. On looking at the mass from behind, the posterior lip of the cervix is seen to be represented by a thin, tape-like band, while the anterior is occupied by the lower pole of the growth, which has so distorted the cervical canal that its mucous membrane can be seen spread out over the posterior surface of the tumour for a distance of $3\frac{1}{2}$ to 4 inches. On section the tumour is seen to be softened and undergoing myxomatous degeneration; it is a single mass arising in the cervix, and not involving the body of the uterus; its external surface is covered by a thin capsule of stretched-out cervix. The body of the uterus is perched on the upper and posterior aspect of the growth, and is freely

movable on it; on cutting through its posterior wall the endometrium is seen to be quite smooth everywhere, except for some abrasions, evidently the result of manipulation; there is some hypertrophy of the uterine wall, which measures $1\frac{1}{4}$ inches in thickness. The round ligaments are also hypertrophied. The right appendages removed with the tumour show no change.

The clinical history of the case is as follows:—The patient was a married woman aged 37; she had had five confinements, all easy, the last twelve years ago. Up to the birth of her last child menstruation had been quite regular, lasting seven days, but since then irregular losses had occurred at intervals, varying from a week to a few days. The loss at these times was, however, slight, two diapers being sufficient. On two occasions only—in January last—had clots been passed, and these frequent and irregular periods seemed to have caused her no trouble during the twelve years, nor do they seem to have affected her general health in any way. A lump in the abdomen had been noticed for two months, and during this time the patient had a watery, yellowish, occasionally offensive discharge, and had suffered from frequency of micturition and nocturnal incontinence. She was admitted to St. Thomas's Hospital on February 3rd, 1903, under Dr. Cullingworth, when she was found to have an abdominal tumour, reaching to within a finger's breadth of the umbilicus. *Per vaginam*, the os uteri was greatly distorted, the anterior lip being the seat of a large, rounded, elastic swelling, with which the lip itself had become incorporated on the right half of its extent. The posterior lip and left extremity of the anterior were put on the stretch by this growth, which appeared to be the lower extremity of the one felt *per abdomen*. The sound passed $5\frac{1}{2}$ inches to the left of the main mass. The patient remained in hospital for a fortnight, and during her stay lost no blood except on one occasion, when there was a fairly free loss one evening on her getting up, but this ceased by the following morning and did not occur again. The question of opera-

tion was put before her by Dr. Cullingworth, but in view of the slight nature of her symptoms she decided to go out and think the matter over. She came up to the hospital a few weeks later and saw Dr. Cullingworth, and arranged to come in after Easter for abdominal hysterectomy. On Thursday, March 12th, about 8 a.m., just as she reached the factory, where she was employed at boot-sewing, a very severe hæmorrhage began; she went to the lavatory and remained there an hour, losing very profusely all the time. She was therefore brought straight up to the hospital in a cab, and admitted at once. While being bathed after admission she became collapsed, and for a time almost pulseless, but did not lose consciousness. After being put to bed she got much better for a few hours, but about 6 p.m. the hæmorrhage came on again as profusely as before. Four pints of blood and clot were collected in a bed-pan and measured by the nursing staff, quite apart from the large quantity which was soaked up by the pads and by her garments. In answer to a message from the house officer I went down to the hospital for Dr. Cullingworth at 9 o'clock, and found her in fair condition considering the large amount of blood which had been lost during the previous twelve hours. She was, of course, extremely anæmic, but had a pulse of 96, of fair strength. She was restless and very much alarmed about herself, as the bleeding was still going on. I examined her, and found the condition as noted on her previous admission. The uterus was plugged with three strips of iodoform gauze, a hypodermic injection of ergotin and a morphia suppository were given, and arrangements were made for operation on the following morning. I discussed the matter with Dr. Cullingworth, who kindly handed over the further treatment of the case to me, and on his advice decided to begin from below, and, after separating the tumour from the bladder and its vaginal attachments, to complete the operation by the abdominal route. The patient had a fair night, but the hæmorrhage had just commenced to come through the plugs, which

were quite soaked when removed at the beginning of the operation. The bladder was easily separated, and the incisions through the vaginal wall carried round the cervix, but it was found impossible to reach the peritoneum either in front or behind. Throughout this procedure there was continuous free bleeding from the uterus. The abdomen was then opened, and the tumour found to fill the right side of the pelvis, the body of the uterus being unaffected and occupying the left and posterior part of the mass. The tumour was then brought outside and its connections ligatured and divided. After its removal there was some troublesome venous oozing, which required a little time to control, and as the condition of the patient had become very grave during the dragging on the tumour, three pints of normal saline solution were given by intra-venous injection, a loose gauze plug was put into the vagina so as to drain the lower part of the pelvis, and the abdominal wall was closed. The patient rallied well and made a good recovery.

The interest of the case lies chiefly in the symptoms caused by the tumour. It is commonly stated that cervical fibroids are characterised by pressure symptoms rather than by hæmorrhage, and that the absence of the latter is explained by the non-involvement of the uterine body. In this case the pressure symptoms were confined to slight trouble with micturition, while the hæmorrhage, though inconsiderable up to within twenty-four hours of the operation, was in that time so severe that it was more suggestive of the bleeding from an ulcerating growth involving a large vessel than that from the endometrium of a fibroid uterus. Examination of the specimen afterwards threw no further light on the source of this very profuse hæmorrhage. The mucosa was abraded, as might have been expected as a result of the plugging and manipulation, but nothing was seen in the way of ulceration or exposed vessels.

Dr. Herbert Spencer thought it might have been possible to remove one of these tumours by enucleation *per vaginam;* this

he considered was the ideal method of treating cervical fibroids, and should be employed in all cases where the tumour was not larger than a fœtal head. He had successfully treated five cervical fibroids in this way; four of these were interstitial, and one, which was cystic, was as big as a fœtal head. By bisecting or coring the tumour he thought a solid tumour could be removed as easily as a cystic one, and he should certainly remove all *small* cervical fibroids by the vagina. With reference to Dr. Galabin's remarks on the inapplicability of Doyen's method of abdominal hysterectomy in cases of large cervical fibroids, he reminded the Society of a case ('Obstet. Trans.,' vol. xliii, p. 52) in which he had removed a uterus with a cervical tumour weighing 8 lbs. 15 oz. by Doyen's method, which, in its essential features, he considered applicable to any fibroid tumour requiring hysterectomy.

Dr. Cullingworth said that he personally had learnt at least two valuable lessons from the specimens shown that evening. (1) He had learnt that chronic inversion of the uterus might be present for weeks together without giving rise to hæmorrhage, whereas he had always regarded hæmorrhage as the one constant symptom of chronic inversion; and (2) he had learnt that large interstitial or submucous fibro-myomata of the cervix uteri might be attended with profuse hæmorrhage, though no other discoverable lesion is present. One of Dr. Galabin's specimens was instructive in another way. It showed that a large fibro-myoma of the cervix, even though, as far as could be ascertained, quite healthy, might continue to grow after the menopause. It had been generally held, in the case of fibro-myomata of the corpus uteri, that hard healthy tumours ceased to grow at the menopause, and that continued growth *after* that period meant that the tumour or tumours had undergone or were undergoing some sort of degenerative change. It was evident from Dr. Galabin's specimen that, even if that were true of corporeal fibro-myomata, it was not, at any rate, *universally* true of similar tumours in the cervix. This had an important bearing on the question of treatment. If healthy fibro-myomata, whether of the corpus or cervix or both, could be shown to be liable to continue to grow after the menopause, the promises we were in the habit of holding out to patients must be considerably modified. He wished again to repeat what he had said before, both at that Society and elsewhere,—that the soundness of our advice in regard to treatment depended on the accuracy of our knowledge of the natural history of these growths, and that in the present imperfect state of our knowledge every well-authenticated instance of growth of a uterine fibro-myoma after the menopause ought to be recorded.

Dr. Blacker had recently met with an interesting case of fibroid tumour of the cervix uteri. The patient, a widow aged 77,

came to the Great Northern Hospital complaining of a vaginal discharge, yellowish white in colour and somewhat offensive, which had been present for upwards of twelve months. The menopause had occurred at the age of 52. Before this the periods had been regular, recurring every four weeks, lasting four or five days, and accompanied by the passage of clots, but not by the recurrence of any pain. Nine months before coming to the hospital the patient was seized with a sudden sharp pain in the vagina. On examining herself she felt what she took to be a piece of bone with sharp edges lying in the front passage, which she extracted. The pain then ceased, but recurred again one month later. When seen in the out-patient department there was present a considerable amount of a somewhat watery, brownish, and offensive vaginal discharge, and the patient said that she had recently passed a number of small pieces of bone and dead tissue. On examination a soft breaking-down tumour, containing pieces of calcareous material in its interior, was felt, apparently protruding through the external os. The diagnosis was made of a fibroid polypus of the uterus undergoing calcareous degeneration. The patient was admitted into the hospital, and under an anæsthetic the tumour was found to be about the size of a blood-orange, and attached by a narrow band to the posterior lip of the cervix. It contained several small masses of calcareous material, and it was very soft, breaking down readily under the finger. The uterus was small, and apparently did not contain any other fibroid tumour. The removal of the tumour in portions was followed by a sharp attack of hæmorrhage, which was controlled by plugging the vagina with iodoform gauze. Recovery was uneventful, and one month later the patient was quite well.

Mrs. Stanley Boyd thought that Dr. Fairbairn's case was not exceptional as regards hæmorrhage. Her experience was limited to smaller cervical fibroids than those shown, ranging from a chestnut to an apple, but she associated cervical fibroids with the most severe and intractable hæmorrhage. This point was raised in the discussion on fibroids at the Cheltenham meeting of the British Medical Association, and the President, Dr. Byers, and several other speakers concurred in the view that cervical fibroids frequently gave rise to quite furious hæmorrhage.

Dr. Amand Routh agreed with Mrs. Stanley Boyd that severe hæmorrhage was common in these cases, even after the menopause, especially where the cervical fibroid was small. He had found vaginal enucleation of these smaller cervical fibroids easy, but hæmorrhage, both primary and secondary, was very apt to occur and very difficult to control.

Dr. Galabin said that as regards the question of removing the tumour by vaginal hysterectomy, referred to by Dr. Spencer, he thought it tempting to do so when there was an object in

saving the fundus. In the case, however, to which Dr. Spencer referred, there was none, as the patient was two years past the menopause, at the age of 55, with a growing tumour. The difficulty of arresting hæmorrhage referred to by Dr. Routh was against the vaginal operation. Apart from saving the fundus, he did not sympathise with the zeal in every case to remove a fibroid uterus by the vagina, if it was just possible to do so. He did not think that nowadays the risk of the abdominal operation was materially greater. It was a much more aseptic operation, the patient suffered less pain, and complete healing of the wound was attained more quickly.

SMALL ROUND-CELLED SARCOMA OF ENDOMETRIUM.

Shown by Dr. Galabin.

Dr. Galabin showed a microscopic section from the uterus of a patient, unmarried, aged 51. The menopause had occurred five years before. For fifteen months she had had hæmorrhage through the vagina, for which she had been under medical treatment, and three examinations had been made, including the use of the speculum. She then came under the care of Dr. Milligan, of Northampton, who sent her for Dr. Galabin's opinion.

Dr. Galabin found an ulcer just within the hymen, with hard edges, and bleeding on manipulation. A mucous polypus was removed from the cervix, which proved innocent, and blood was issuing from the os. Dr. Galabin thought that cancer of the fundus had set up a metastasis at the vaginal outlet, probably through some abrasion caused by the speculum. He decided to operate without waiting for microscopic verification. A large piece of the vagina, with the ulcer, was removed, and the uterus by vaginal hysterectomy, which required free incisions into the ischial fossæ, the vagina being senile and contracted.

The interior of the uterus showed the ordinary appearance of a circumscribed carcinoma of the endometrium. In the section the peculiarity of the growth was that it consisted of cells smaller than those usual in sarcoma, and about the size of inflammatory cells, so that some parts of the growth looked like an inflammatory infiltration. He thought that the growth originated from the endometrium, not from the muscular wall, especially as some imperfect pieces of glands were seen here and there. The metastasis had the same structure.

The patient showed as yet no signs of recurrence, but the operation had only been done about two months.

In his experience this form of growth was very rare. Many years ago a specimen was shown by Dr. Matthews Duncan at the Society, in which an ulceration of the fundus had run a malignant course, had perforated the uterus, and led to fatal peritonitis. A section was pronounced by Dr. Thin to show only inflammatory infiltration, but Dr. Galabin had then thought that the disease might really be of the nature of sarcoma.

A CASE OF PRIMARY TUBERCULOSIS OF THE CERVIX UTERI FOR WHICH VAGINAL HYSTERECTOMY WAS PERFORMED.

Shown by Dr. W. H. B. Brook.

Mrs. A—, aged 50, was seen on February 20th, 1903, complaining of leucorrhœa, pain in the sacral region, and loss of flesh for the past two months. Had one child at the age of 21, and four miscarriages, the last twelve years ago; after the last a pessary was worn for about a year. Five years ago the uterus was curetted for endocervicitis;

she has since then suffered on several occasions from cervical catarrh, but always came at once for examination and treatment, having a great fear of cancer, from which some friend of hers had died.

A mixture containing iron, bromide of potassium, and nux vomica always had a good effect.

The last time that she had been seen previously was on March 21st, 1902, when a note was made that "nothing abnormal was discovered."

The catamenia have been irregular for the last three years, being last seen at the end of December, 1902. They have never been excessive, nor has there ever been any loss except at the period.

Previous history.—Influenza twelve years, and pneumonia nine years ago. Her own statement is that she has been ailing all her life, but with respect to this her neurotic temperament must be taken into consideration.

Family history.—Mother and one brother died of phthisis, aged 40 and 36. The patient's husband, a farmer, is a strong, healthy man.

Condition on February 20th, 1903.—"Is a sparely built, active woman, of a decidedly neurotic temperament; hair very grey, complexion sallow, suffers from constipation. The lungs, heart, and kidneys appear to be healthy. Nothing abnormal detected on examination of the abdomen.

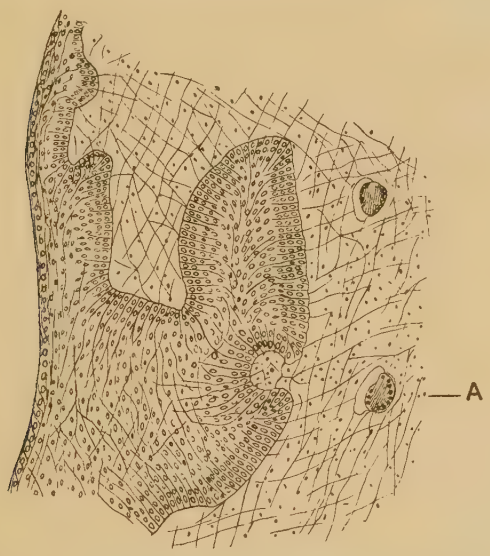
"*On vaginal examination.*—There is a certain amount of leucorrhœa. There is a circular ulcer the size of a sixpence on the anterior lip of the cervix extending into the external os; its edge is sharply defined, the surrounding border appearing slightly raised; the surface is granular, ragged, and pitted, and rather pale in colour. There is no inclination of the cervix, which does not bleed on examination more readily than usual, nor is the surface of the ulcer friable.

"The uterus is not enlarged, and is freely movable; no enlarged glands can be detected."

Although the appearance of the cervix was not typical of carcinoma, yet it was so unlike a simple erosion,

resembling rather a patch of lupus vulgaris, that a small piece was sent for examination to the Clinical Research Association, who reported that although the portion sent was too small for a thoroughly satisfactory examination, yet, so far as could be ascertained, the lesion was of a tubercular nature.

On March 12th, under chloroform, I excised the whole of the affected area, applying iodised phenol to the endo-



Section of cervix showing columnar epithelium and two giant-cells in the submucosa. × 160.

metrium and cervix. The portion excised was sent up to the Clinical Research Association, who reported that the disease was undoubtedly tuberculosis of the cervix.

As no evidence of tubercle could be found elsewhere, this must have been a primary lesion.

On March 26th the cervix presented the same appearance of an indolent ulcer, with sharply cut edges and a depressed ragged surface, but now the posterior lip was affected as much as the anterior. It was therefore

decided to extirpate the uterus, but on the day fixed for the operation the catamenia reappeared, the flow being perfectly natural in character.

On April 4th the uterus was removed by vaginal hysterectomy, the broad ligaments being secured by pressure forceps; as the ovaries appeared to be healthy they were not removed.

There was remarkably little hæmorrhage from the cut vaginal mucous membrane, due, I think, to the administration of chloride of calcium for some days beforehand.

The vagina was lightly packed with iodoform gauze, which was changed the next day. The pressure forceps were removed at the end of forty-eight hours.

The patient made an uneventful recovery, and has now put on flesh, and looks in better health than she has done for some months.

This case is of some interest as an instance of primary tuberculosis of the cervix, viz. tuberculosis occurring in a patient who shows no sign of any tubercle elsewhere, not even the vagina being affected.

In the 'Transactions of the Obstetrical Society' for 1902 a case is reported by Dr. Lewers, who refers to two other instances; and in the same volume are notes of two cases recorded by Dr. Horrocks and Dr. Croft.

As to the treatment which was adopted, Professor Pozzi, in his 'Treatise on Gynæcology,' vol. iii, p. 142, says that "there should be no hesitation in performing hysterectomy even for a very circumscribed ulceration of the cervix, if the diagnosis be certain;" and Dr. Lewers (op. cit.) says "that given a case of primary tuberculosis of the cervix, where there is reason to believe there is no tubercle elsewhere, vaginal hysterectomy is the right treatment."

Considering, however, the similarity between the lesion in these cases and that of lupus, and the value of the application of the Röntgen rays in the latter disease, it is a question whether we ought not to adopt that method of treatment, care being taken, however, not to lose valuable time in so doing.

On examination the disease was found to be limited to the cervix, the body of the uterus being healthy. Typical multinucleated giant-cells were seen in the submucosa of the cervix.

Mr. TARGETT remarked on the rarity of primary tuberculosis of the cervix. He had had the opportunity of examining this specimen, as well as two others which had been recently exhibited at the Society. In none of them was there any evidence as to how the cervix had become infected. He alluded to a case of acute tuberculous ulcer on the glans penis of an otherwise healthy man, which was supposed to have been contracted from his wife, who was very delicate and had been curetted for chronic leucorrhœa. He did not think that Röntgen rays would have been of much service for this lesion, because microscopical sections showed that miliary tubercles were already deeply situated in the substance of the cervix.

Dr. CULLINGWORTH hoped that, in consideration of the importance of the subject and the need for more knowledge about it, Dr. Brook would be good enough to report the condition of the patient in twelve months.

A CASE OF PULMONARY EMBOLISM OCCURRING TWENTY-FOUR DAYS AFTER DELIVERY.

Shown by HERBERT WILLIAMSON, M.A., M.B., M.R.C.P.

THE specimen which I show to-night I removed a few weeks ago in the *post-mortem* room from the body of a woman aged 20 years. She had previously borne two children, and on October 30th, 1902, was delivered for the third time. The labour was in every way natural and quite easy.

On November 4th her temperature commenced to rise,

and she showed other signs of septic infection. On November 7th the temperature was 105°, and on that day the patient was admitted into St. Bartholomew's Hospital under the care of Dr. Champneys. The lochia were still blood-stained, and the uterus was found to be larger than it should have been eight days after delivery. An anæsthetic was administered and the uterus explored; some shreddy masses were removed from the placental site, and an intra-uterine douche was given. Immediate improvement followed this proceeding, and by November 23rd she was considered well enough to be allowed to return home.

As she was walking down a small flight of steps on her way out of the hospital she was noticed to stagger and fall. Dr. Hunt (the obstetric house physician) happened to be close at hand and saw her immediately. He found her cyanosed, and noticed slight spasmodic movements of the jaw. The chest was motionless; no attempts at respiratory movements were made. No sounds could be heard over the heart; the pulse in the radial artery could not be felt, but the veins at the root of the neck could be seen to pulsate. When artificial respiration was performed the air passed in and out of the lungs with the greatest ease, but the cyanosis first deepened, then gradually faded away into pallor. The diagnosis of embolism of the pulmonary artery was therefore made.

At the *autopsy* the blood all over the body was unusually fluid. On opening the abdomen recent peritoneal adhesions were found in the pelvis. The uterus was enlarged, and its cavity contained a small quantity of blood-clot. It showed no other signs of inflammation. The Fallopian tubes were adherent to the back of the uterus, but the canal on each side was patent. The right ovary was cystic. The uterine vein on the right side, and the veins of the pampiniform plexus in the right broad ligament were distended with pus. The internal and common iliac veins on the right side were filled with firm, pale red thrombus. The inferior vena cava contained a portion of loose thrombus, situated just above the point of entrance of the

renal veins. The rest of its lumen was occupied by fluid blood. The right ventricle contained nodular masses of *ante-mortem* clot, which were adherent to the columnæ carneæ. The orifice of the pulmonary artery was completely occluded by a mass of firm thrombus.

The specimen shows the right ventricle of the heart laid open on its anterior aspect. Immediately below the conus arteriosus is a mass of *ante-mortem*, partially decolourised clot, firmly adherent to the columnæ carneæ. The orifice of the pulmonary artery is completely blocked by a mass of the same material; this extends much farther into the right than into the left branch of the vessel, the right being completely occluded for nearly its whole length. The lungs are intensely congested and engorged, particularly the lower lobes. Both arteries and veins are thrombosed, and considerable extravasation of blood has taken place into the lung tissue.

A CASE OF INCOMPLETE TUBAL ABORTION SHOWING INTRA-MURAL EMBEDDING OF THE PLACENTA.

Shown by Dr. Cuthbert Lockyer.

(With Plates IV, V, VI.)

The patient, Mrs. C. V—, was aged 29. She had been married thirteen years; had one child twelve years ago. She was first seen by Dr. Lockyer on November 19th, 1902, when she complained of pelvic pain and a brown discharge. Three weeks previously she had aborted after missing one period. Until this abortion threatened menstruation had been regular, lasting six days, and was not excessive. There had been no dis-

charge. The bowels were always costive, and on several occasions blood had been passed *per anum*. Micturition was not increased in frequency, but a dragging pain was complained of after the completion of the act.

Pain in the lower abdomen and in the sacral region had been present off and on for seven years. The pain was described as aching and bearing down in character; it was relieved by lying down. Six years ago she was treated by her medical attendant for displacement of the womb, but she could not wear the pessary which was inserted. Three years ago she underwent curettage, and the uterus was replaced and a pessary inserted again and worn for five months. From this time until the abortion in November of last year the patient's health was fairly good.

On examination three weeks after the abortion the uterus was found to be bulky, retroverted, and fixed by perimetric adhesions; there was considerable tenderness in the fornices, but no tubal enlargement was distinguishable. No uterine discharge was seen. There was no sign of vaginitis.

After this examination she stayed in bed for seven weeks, and was treated by Dr. Cato, of Sydenham, with hot douches, tampons, and laxatives. This produced no effect; the fixation of the uterus was as firm as ever, the tenderness was quite as marked, and the pain had not abated. Abdominal section was consented to, and carried out on April 11th, 1903. At the operation the uterus and appendages were found matted to the floor of the pelvis; the former could not be brought up by traction. A broad sheet of fibrous tissue which fixed the fundus uteri to the rectum and utero-sacral pouch was ligatured and divided. The adnexal structures of the right side were next removed; these consisted of a hydrosalpinx and adherent ovary. Whilst separating adhesions on the left side a pocket was found (limited in front by the broad ligament, and for the remaining parts by adhesions), containing the left ovary, the fimbriated end of the tube,

and a small pedunculated cyst, which was taken to be a hydatid of Morgagni or a dilated tube of Kobelt.

There was no blood or serous fluid in the above "pocket." The left Fallopian tube was observed to be dark in colour, but only slightly thickened; no appreciable distension was noticed.

After the ovary and tube on the left side were removed, the uterus was brought to the anterior abdominal wall, to which it was sutured by a single silk ligature. The abdominal wall was then sewn up in layers. The patient took the anæsthetic badly, as she was said to have done when curetted three years previously. The operation lasted one hour. Convalescence was apyrexial. The abdominal wound healed by first intention.

Description of the tissues removed.—The right tube was intimately adherent to the corresponding ovary. The former measured 10·5 cm. The proximal end was dilated and tortuous for 5·5 cm. of its extent. Its distal part was represented by a spherical sacculus with a diameter of 5 cm.; the ostium was not apparent. The right ovary was nearly circular; its diameter measured 4 cm.; it contained several small cysts, and one corpus luteum measuring 1·5 cm. in diameter.

The left tube throughout its whole extent was much smaller than that of the opposite side. The length of the portion removed was 5·5 cm. The ostium was patent, its diameter measuring 0·5 ($\frac{1}{2}$) cm. Proceeding from the lumen through the patent ostium was seen the delicate stalk of the cyst above referred to. A soft substance could be felt in the tube at a distance of 1·5 cm. from the fimbriated end. This corresponded in position to a scarcely appreciable enlargement of the tube. By transmitted light a tiny crescentic body, of the size of a newly hatched silkworm, could be seen in the free pedunculated sac which lay outside the abdominal ostium.

The conclusion arrived at from the above observations was that the soft substance in the tube must be a placenta, the cyst an amniotic sac, and the pedicle of the cyst an

umbilical cord. The specimen was pinned out on cork and placed in Kaiserling-Pick's fixing fluid, and subsequently the distal 1·8 cm. of the tube was opened by a longitudinal incision. This cut incised the distal pole of the solid substance in the tube, and showed its connection with the pedicle of the sac. A microscopic section through the equator of the above substance showed the presence of chorionic villi.

The following measurements were now taken from the fixed tissues:—The placenta occupied $1\frac{1}{4}$ cm. of the length of the tube. The transverse section of the tube through the equator of the placenta measured 0·8 cm., the transverse diameter of the placenta measuring 0·5 ($\frac{1}{2}$) cm. The left ovary, when fixed, measured 4 × 2·5 cm., and contained a corpus luteum which measured 2 × 1·5 cm.

The specimen exhibited consists of the left tube and ovary. The former shows the position of the placenta, and the amnial sac is seen lying outside the fimbriated extremity, whilst the umbilical cord traverses the opened lumen and connects the attached placenta to the free amniotic sac. The embryo was lost owing to rupture of the sac in the transmission of the tissues from the hospital to the museum. Plate IV is a full-sized coloured drawing of the specimen. The microscopic sections have been taken transversely through the centre of the long axis of that part of the tube occupied by the placenta. Plate V shows these sections in figs. 1 and 2. Fig. 1 shows the entire tube wall limiting a lumen devoid of blood-clot, and containing plicæ cuts in various directions. The placental tissue is degenerated; free hæmorrhages are seen; the villi are fibrotic; the trophoblastic layer has largely disappeared from most villi; a few multinuclear buds of protoplasm are alone left. The tiny molar placenta *is excluded from the lumen of the tube* by a capsule composed externally of tubal mucosa, and internally of tissue closely resembling the fibro-muscular coat of the tube. The minute structure of the capsule is represented in fig. 2 of Plate V, which was drawn from a section stained by logwood and eosin.

DESCRIPTION OF PLATE IV,

Illustrating Dr. Cuthbert Lockyer's specimen of Incomplete Tubal Abortion.

The drawing shows the left Fallopian tube, with its distal portion split in its long axis to show the umbilical cord and placenta. The amniotic sac lies outside the tube. The microscopic sections of the tube shown in Plates V and VI were taken from the distal end of the unopened portion, where it joins the part cleft longitudinally. The left ovary contains a recent corpus luteum.

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DESCRIPTION OF PLATE V,

Illustrating Dr. Cuthbert Lockyer's specimen of Intramural Embedding of the Placenta.

Fig. 1.—Shows the entire placenta in transverse section. It is surrounded by a capsularis similar in structure to the inner part of the tubal wall. Plicæ are seen projecting from the tube wall and also from the capsularis into the lumen. No blood has been extravasated into the lumen of the tube. There is no "decidual reaction" in the tubal wall.

Fig. 2.—Shows a portion of Fig. 1 under a high power ($\frac{1}{6}''$), reduced in reproduction. The structure of (c) the capsularis is better seen, and can be compared with the structure of the tubal wall (a).

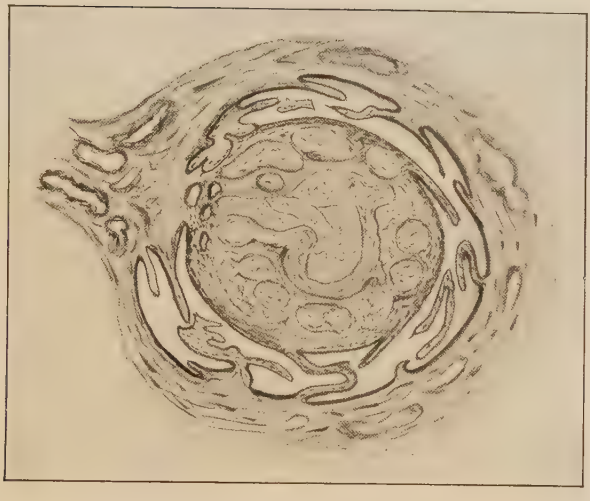
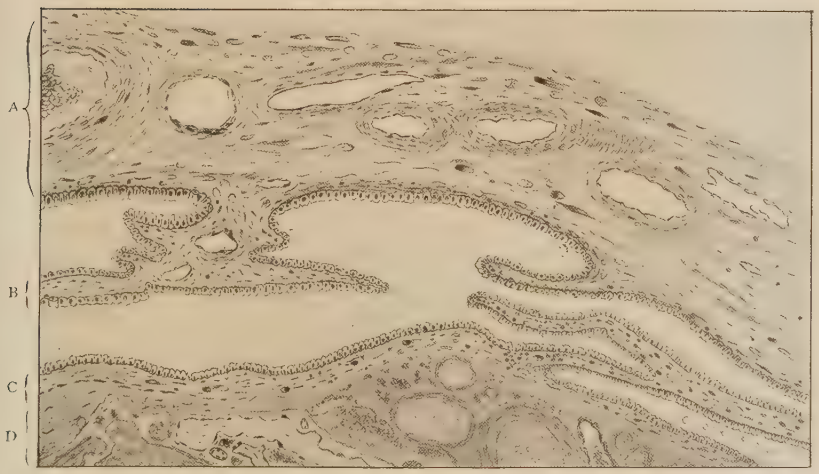


Fig. 1.

Showing Intramural Implantation of Placenta. Magnified x 7 diameters.



⅓ Obj.

Fig. 2.

Section showing the character of "Capsularis" of Placenta.

A Tube Wall. B Plica. C Capsularis. D Placenta.

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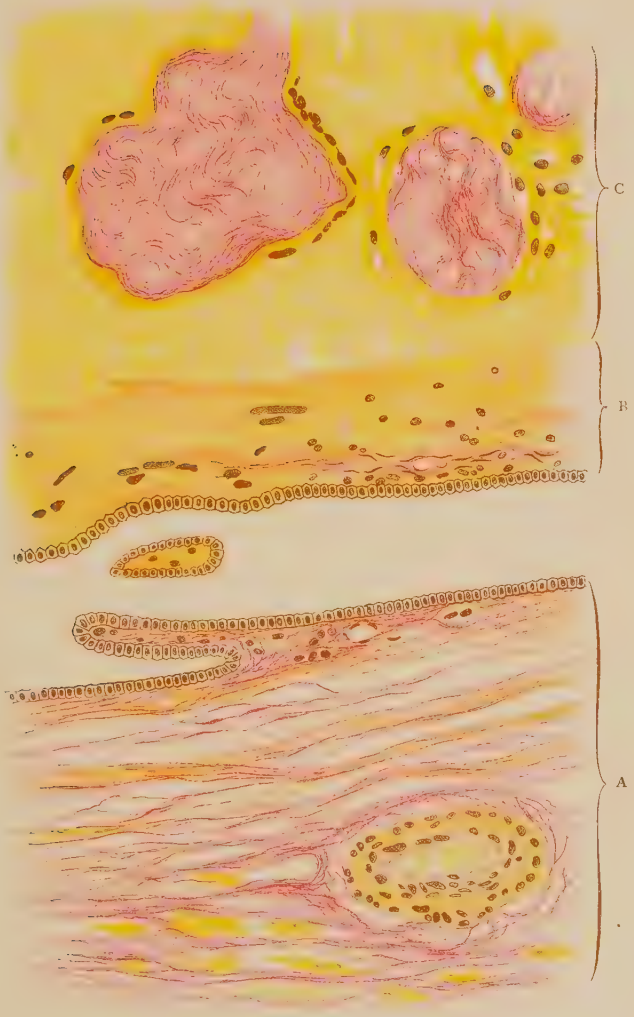
DESCRIPTION OF PLATE VI,

Illustrating Dr. Cuthbert Lockyer's specimen of Intramural Embedding of the Placenta.

Section of tube and placenta stained by von Giesson's method for the purpose of differentiating the structures of the capsularis. A, tube wall; B, capsularis; C, placenta. The capsularis shows well-marked columnar epithelium, under which the tissues are very hyaline in character; no definite muscle bundles are seen, but muscle nuclei are shown.



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Another section prepared by von Giesson's method has been sketched under $\frac{1}{6}$-inch objective, and is represented in Plate VI. No definite well-formed muscle-fibres have been found, but long nuclei with rounded ends, corresponding in shape to muscle-nuclei, and contrasting strongly with the thinner, tapering, spindle-shaped, and wavy nuclei of fibrous tissue, are to be seen. Fully formed fibrous-tissue bundles containing collagen, which stains a deep lake colour with von Giesson's differential stain, are seen in abundance; but in the parts of the capsule stained brown no well-developed muscle-fibres are seen, due perhaps to degenerate change, as suggested by the hyaline character of the tissue which has taken the brown stain. The differential staining for muscle-fibres in this investigation is not yet completed, and up to the present the proof of the existence of muscle-fibres rests solely on the shape of the nuclei; but a demonstration of unmistakable muscle-fibres in the capsule of the placenta is not despaired of, and the research is still proceeding. The sections, however, prove clearly that the placenta is situated in the wall of the tube, *i. e.* that the ovum was embedded deep to the mucosa after impregnation; but the point yet to be decided is the depth to which the penetration of the trophoblast proceeded. If definite muscle-fibres can be demonstrated in the capsule, the embedding must have taken place in the muscularis of the tube.

The sections further show that the attached portion of the placenta happens to correspond to the mesosalpinx, and is therefore in the floor of the tube.

This investigation proves that the mode of embedding of a pregnant ovum in the tube is analogous to that which has been shown by Peters to occur normally in the endometrium in intra-uterine gestation. No decidual reaction is seen in the tube wall at the placental site.

Photograph 1 shows the swollen character of the connective tissue in a plica cut across one centimetre internal to the placenta. In comparing this with a section through the right tube taken internal to the distal sacculus, a

similar turgescence is seen on the right side, making it impossible to distinguish which of the two sections was taken from the gravid tube.

Both ovaries have been submitted to microscopic investigation. The section taken from the left ovary has been photographed (Photo. 2) to show swollen cells lying in the stroma, but a similar swollen appearance is seen in the cells of the right ovary. Therefore no typical decidual reaction has been found in those tissues where, in cases in which the life of the ovum has been prolonged beyond the age of this specimen, it has been frequently demonstrated.

ON THE ANATOMY OF THE PREGNANT TUBE.

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(Received November 5th, 1902.)

(*Abstract.*)

The author discusses the reasons why accurate knowledge of the minute anatomy of the pregnant tube has been only recently acquired.

From a study of the literature on the subject, chiefly that of the last seven years, and from sections made by himself, the author gives a short description of the histological appearances of the tube and ovum in early tubal pregnancy. The question of tubal decidua is first discussed. In intra-uterine pregnancy decidual changes are not confined to the corporeal endometrium, similar changes being found in the connective-tissue cells of the cervical endometrium and ovaries, and also in the peritoneal cells. In tubal pregnancy decidual changes are found in the endometrium and in the connective-tissue cells of all parts of the tube. A compact decidua, comparable to that formed in the uterus, is not formed in the tube, the difference in the amount of decidua in the two organs depending on differences in their anatomical structure.

Attention is drawn to the difference in the structure of the mucous membrane of the tubal folds, and that of the mucous membrane between the folds.

The latest researches on the embedding of the ovum in the

uterus are briefly mentioned, and attention is drawn to the fact that the method of embedding of the ovum in the tube is at first similar to this normal process, but that later the ovum bores its way into the tubal muscle on account of the comparative thinness of the tubal mucous membrane.

The fœtal part of the placenta formed in the tube is in every way identical with that formed in the uterus. The maternal part, however, is markedly different in the two organs.

A short account is given of the trophoblast as seen in the tube, and it is shown that it is exactly like the trophoblast as described by Peters in uterine pregnancy.

The danger to life associated with tubal pregnancy is due to the deep situation of the tubal placenta and the comparatively small amount of decidual formation. Abortion and rupture are explained as being results of the penetrating action of the trophoblast. These two accidents are very similar in ætiology, the former being an "internal rupture," caused, as is the latter, by the destructive action of the trophoblast. The breach of surface on either the peritoneal or mucous aspect of the tube is brought about either directly by destruction of tissue by the trophoblasts, or indirectly by increase of pressure due to bleeding from those vessels whose walls have been destroyed by these fœtal cells.

Conclusions.

1. Decidual formation does not occur in the tube in the early months of pregnancy to an extent comparable to that seen in the uterus. In many tubes the formation of a compact layer of decidua is anatomically impossible.

2. The site of the ovum is outside the lumen, in the tubal muscle. It seems impossible to explain this deep site except as due to the eroding action of the trophoblast.

3. The vessels are opened by the trophoblast.

4. Rupture and abortion are mainly brought about by the destructive action of the trophoblast.

Introduction.

Our knowledge of the minute anatomy of the pregnant tube, and of the process of the embedding of the ovum in the tube, has only been very recently acquired. The reasons why this knowledge came so much later than the accurate clinical recognition of tubal pregnancy are the following:

The manner in which the ovum is embedded in the uterus was not well described until 1899. Although a good deal was known about the minute relations between the ovum and the tube before this, it was impossible to accurately explain the conditions found associated with abnormal embedding of the ovum in the tube, until the normal physiological method of embedding in the uterus was thoroughly understood.

The difficulty of obtaining early and undamaged specimens of pregnant tubes is great, and the best specimens are often put in museums and not submitted to thorough examination.

Careful preparation of the specimen is necessary for a study of the relations of the ovum to the tube. If a pregnant tube is slit up longitudinally in the fresh state quite a wrong idea is usually gained of the relation of the ovum to the tube lumen. In every case examined in this way the ovum appears to be in the lumen of the tube. To examine these relations satisfactorily, the tube containing the ovum must be hardened as a whole, and not cut at all until thoroughly hardened. Transverse sections through the hardened specimen show the true relations between the ovum and the lumen, and even if the partition between them has been broken down by bleeding, microscopical sections will show that the site of the ovum was outside the lumen.

While the study of the embedding of the ovum in the uterus is largely of purely scientific interest, being entirely physiological, the study of the corresponding process in

the tube is of great practical interest and importance. The manner in which the ovum is embedded in the tube must be looked upon as being to a certain extent, if not entirely, a pathological process, and it is, in most cases, directly or indirectly responsible for the danger to life associated with tubal pregnancy.

The object of this paper is to describe, from a review of the literature of the subject, and from my own observations and sections made in the laboratory of Prof. Schauta's Klinik in Vienna, the present state of our knowledge of the minute anatomy of tubal pregnancy in the first two months, and to show to what extent this knowledge enables us to explain the occurrence of the two most common modes of termination of tubal pregnancy, viz. abortion and rupture.

I wish to express my gratitude to Dr. Fritz Hitschmann, assistant in Prof. Schauta's Klinik, for his very kind help and guidance in the preparation of this paper.

Diagnosis and treatment do not come within the scope of this paper. They have both been frequently discussed in the various societies, and much has been written on them in this country, while on the subject of the minute anatomy of the pregnant tube very little has appeared in the English language in the last seven years.

The Embedding of the Ovum in the Tube.

The tubal decidua.—The question of tubal decidua has always been one of great interest, we may even say of paramount importance, since the presence of a decidua in the tube was a few years ago considered to be absolutely necessary for the occurrence of tubal pregnancy.

What is a decidua? In the uterus the decidua is formed by changes in the endometrium, the changes affecting the stroma cells and the glands. The stroma cells become much increased in size, the enlargement of the cell-bodies being out of proportion to that of the nuclei, so that the resulting decidual cells are epithelioid

in character. Besides their increase in size the cells undergo a chemical change, *i. e.* the decidual cells can be proved to contain glycogen. The cell outlines become indistinct. The nuclei stain best at their periphery. These changes affect chiefly the cells of the superficial layer of the endometrium, a compact layer of large rounded cells being formed, tightly packed together, and often very much resembling squamous epithelium (Fig. 1).

The glands are altered in two ways. The lumen is markedly widened, and the epithelial cells, besides becoming more cubical than columnar, undergo proliferation. Small clumps of proliferated cells project into the lumen, giving the epithelium a many-layered appearance. The basement-membrane does not take much part in these bud-like projections, they are formed chiefly by the cells alone. From the widened lumina of the glands is produced the spongy appearance of the deep layer of the decidua.

Formerly the decidual cells, from their epithelioid characters, were thought to arise from epithelial cells. Later it was suggested that they were formed out of the leucocytes which can usually be seen round the glands in the cytogenic connective tissue of the endometrium. It is now certain that they arise from the already present connective-tissue cells. Examination of a section of early uterine decidua enables us to trace easily transition forms from the unaltered connective-tissue cells between the glands in the deep or spongy layer through the middle layer to the typical decidual cells in the superficial or compact layer.

What is the cause of these changes? Apart from pregnancy, typical decidual cells are never seen in the uterus. A somewhat similar change in kind, but differing greatly in degree, is seen in the stroma cells in hyperæmic conditions, just before a menstrual period, and in some forms of "endometritis." In dysmenorrhœal membranes a resemblance to decidual cells is also seen, explained by some authorities by the assertion that all

these membranes are the result of early abortions. It would seem that the decidual and decidua-like change is the result of increased nutrition.

Decidual changes are found elsewhere than in the endometrium. In uterine pregnancy they are found in—

The cervix.—The usual assertion in text-books that decidual changes do not occur in the cervix is not true. In the cervix large pale cells, exactly like those seen in the body of the uterus, are found under the epithelium, not only under the glandular epithelium of the cervical canal, but also under the squamous epithelium of the vaginal portion. They are not arranged in a compact layer, but occur singly or in small groups. Whether this decidual change always occurs in the cervix in uterine pregnancy I cannot say, but I can say, from my own observation, that it does sometimes occur.

Weiss (42) has described this decidual change in the cervix in placenta prævia ; this point is of great interest.

Fallopian tube.—Decidual change in the tubal mucous membrane in uterine pregnancy has only been described by one observer, Mandl (22), who found decidual changes in the tubal folds in one case out of seven which he examined.

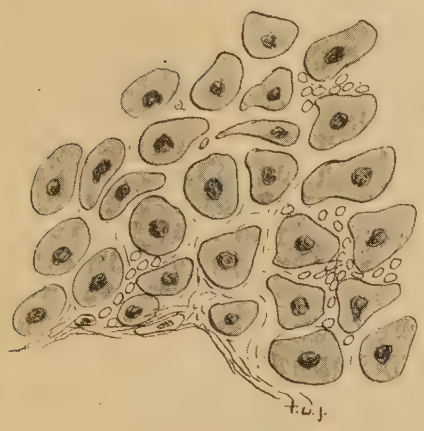
Ovary.—Schmorl (38) first described decidual changes in the ovary in uterine pregnancy. He found large cells, resembling uterine decidual cells, in the ovarian stroma, best marked just under the tunica albuginea. One of my sections shows these ovarian decidual cells extremely well (Fig. 2).

Peritoneum.—Schmorl also described decidua-like, large, rounded cells on the peritoneum covering the tube, and in Douglas's pouch in uterine pregnancy.

Where are decidual changes found in tubal pregnancy ?

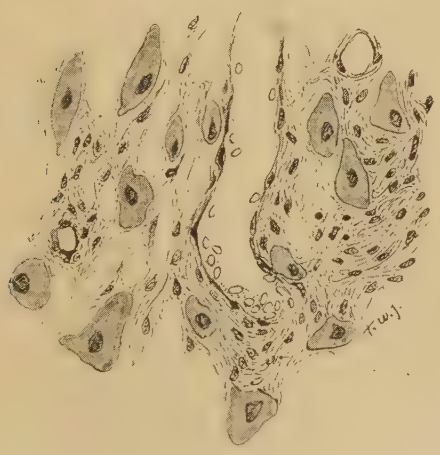
Endometrium.—Decidual formation is seen here in tubal pregnancy just as in uterine pregnancy. V. Maslowsky (27) has described a complete decidual cast of the uterus in a case of tubal pregnancy, in which he

FIG. 1.



Decidual cells from the uterus, in a case of tubal pregnancy. × 500.

FIG. 2.



Decidua-like cells in the ovary, from a case of normal pregnancy. × 500.

found heaping-up of the glandular epithelial cells. He considers that this forms an important differential diagnostic point in distinguishing a uterine decidua in tubal pregnancy from a dysmenorrhœal membrane and from normal decidua. I fail to see anything in his description of the glandular epithelium which is not met with in "normal" decidua.

Tubal mucous membrane.—The changes are most marked in the folds, some of the stroma cells exactly resembling in appearance uterine decidual cells (Fig. 3). The amount of decidual formation varies greatly in different cases. In some tubes the change is only seen at some distance from the ovum, in others it is seen close to it. In two of my sections decidual cells are seen in the folds close to the ovum; in the majority, however, no decidual cells are seen in sections which show part of the ovum. In the part of the tubal mucous membrane between the folds few, if any, decidual cells are found. I shall return to this question later.

Intermuscular connective tissue.—In some cases the intermuscular connective-tissue cells show marked changes. Some of them are enlarged and "decidua-like," though they do not, in my sections at least, reach such a large size as the decidual cells seen in the folds of the endometrium, cervix, and ovaries.

Peritoneal covering of the tube.—Here, in some cases, not in all, are found collections of large rounded cells, which somewhat resemble decidual cells, sometimes forming tags projecting from the surface.

Whether decidual cells are ever found in the ovary in tubal pregnancy I cannot say; I have not succeeded in finding any.

Having seen that decidual formation is found in the tube, and knowing that decidual cells are formed out of pre-existing connective-tissue cells, we come to the question, "Can we expect to find a compact layer of decidua in the tube?" In the folds this is possible, and sometimes occurs, the folds containing numerous con-

nective-tissue cells. In the mucous membrane between the folds the conditions are quite different.

Clarence Webster (41) describes the "normal connective tissue of the mucosa" of the tube as "small in amount, of a modified embryonic nature, consisting mainly of rounded and oval branching cells, with an intercellular stroma slightly fibrillated," but does not distinguish between the structure of the folds and that of the mucous membrane between the folds.

Grusdew (15) says: "Internal to the circular muscle lies the mucous membrane. This consists of a fibrous connective tissue containing mucosa cells, internal longitudinal muscle, and the mucosa vessels. There is only a very small number of mucosa cells, and in the uterine quarter of the tube these cells are entirely absent, the compact layer of the longitudinal muscle extending into the folds themselves and almost reaching the epithelium."

Mandl (22) says: "There is no submucosa. The musculature between the folds often reaches very nearly up to the epithelium, so that in these places one can hardly speak of a well-marked mucous membrane."

The fact that there is so very little subepithelial connective tissue *between* the folds has not received sufficient attention. In healthy tubes the epithelium between the folds lies, in places, directly on the muscle, and nowhere is there more than a very thin layer of connective tissue separating the epithelium from the muscle. In cases of old salpingitis there is much more connective tissue between the epithelium and the muscle. This is in some cases easily explained by the fact that there have been numerous adhesions between adjacent folds so that the mucous membrane is everywhere thick, but this does not apply to all cases. In some, where the folds, though thickened, are quite distinct from one another, the epithelium between them is separated from the muscle by a comparatively thick layer of connective tissue.

In healthy tubes, therefore, a compact layer of decidua between the folds would very often be anatomically

impossible, but a thin layer of "compacta" would be anatomically possible in tubes altered by salpingitis. I do not know whether my observation of this difference in the amount of subepithelial connective tissue is original or not, but I have not met with it in the literature. If it has been noticed before, it is strange that it was not mentioned by the upholders of salpingitis as a cause of tubal pregnancy, in the days when the production of a decidua in the tube was considered a *sine quâ non* for the occurrence of tubal pregnancy.

Several authors have described decidual formation in the tube. It will be sufficient to quote two of them.

Orthmann (31), in 1890, says that the process of decidual formation in the tube begins in the superficial part of the folds, and then spreads deeper, though it is chiefly limited to the superficial folds.

Reflexa.—There is exactly the same decidual transformation here (*i. e.* decidual transformation of connective-tissue cells), most marked at the line of junction.

Serotina.—Here the decidual transformation is least marked, the blood-clot usually lying immediately on the muscle. Only in a few places can a single or double layer of cells, evidently decidual cells, be seen.

In eight out of ten cases the presence of decidual cells was clearly proved. In two cases only a few remains of decidual cells were seen, in the neighbourhood of villi. (These last five words are suggestive. If we wished to find remains of trophoblast, where would we look for it except in the neighbourhood of villi ?)

Webster (41) gave the most complete and full description of decidua in the pregnant tube. He considers the decidual cells to be enlarged and altered connective-tissue cells, the changes beginning anywhere between the vessels.

Vera.—"Careful investigation, beyond doubt, establishes the fact that a decidua vera is always formed. . . . The extent of decidua vera varies considerably in different cases. . . . It consists of (1) a superficial, compact layer,

and (2) a deep, spongy layer. . . . The early recognised distinction of compact and spongy layers becomes gradually lost. Between the folds the vera shows different degrees of thickness."

Serotina.—" Where the ovum becomes attached to the tube wall, that part of the vera in contact with it grows more rapidly than the rest of the decidua."

Reflexa.—" The reflexa has much the same structure as the superficial portion of the decidua. In it, however, degenerative changes . . . progress more rapidly, and it has a large proportion of intercellular substance and fewer decidual cells than the serotina of the same age."

Bland-Sutton (5), in 1896, writes : " From a thorough, careful, and repeated microscopical examination of gravid tubes in exceptionally early stages of pregnancy I have failed to find anything that can be regarded as a tubal decidua, certainly nothing that is cast off in the form of a membrane, and this is the essential qualification for a decidua."

Kühne (20) found decidual cells, formed out of connective-tissue cells, in the tubal folds, but not in the placental site. He pointed out that in previous writings Langhans' cells had been mistaken for decidual cells, and that what had been described as a decidua serotina consisted of Langhans' cells, fibrin, and connective tissue. He gives the following description of decidual cells and Langhans' cells :—" Decidual cells are usually round, sometimes oval or spindle shaped. The cell borders are sharply defined ; the protoplasm is clear. The nuclei are large, of regular oval or rounded shape, and show strikingly pale staining ; they are extraordinarily transparent, the chromatin network being sometimes sharply defined. The cells lie closely together, but usually a fine meshwork of intercellular connective tissue can be seen. Langhans' cells are about the same size as the decidual cells ; their shape is different. They are usually polyhedral, and lie tightly packed together, pressing against each other. Their protoplasm is clear ; the nuclei are rather deeply

stained, and show usually an indented, somewhat irregular form. They show a 'bladder-like' staining of the nucleus and never lose their epithelial character. A nucleolus is easily recognised."

Kreisch (18) pointed out that the Langhans' cells in the tube vary to a certain extent in shape and size, assuming a different appearance when separated from the villi to that which they exhibit when in connection with the latter.

Forms just as atypical are seen in intra-uterine trophoblast, and in the clumps of cells on the villi in a hydatidiform mole.

Most writers on the subject since 1899 agree with Kühne (20) that decidual cells are not found in the place of insertion of the ovum in the tube. Mandl (23) and Füth (14), however, find a few decidual cells there, but agree that no "decidua basalis tubaria" is found.

Veit (40), in 1901, describes some decidual formation round the intervillous space. He is, as far as I have been able to find, the only writer in the last few years who does not agree with the modern interpretation of the cell sheet. He looks on the cell masses in connection with the villi as being fœtal, but does not feel certain whether the cells between the fibrin bands and the intervillous space are fœtal or not, though he is inclined to call them fœtal. The specimen which he describes was undamaged, and the fœtus, which measured 3·8 cm. from vertex to breech, was probably living up to the time of the operation. The blood in the placenta had not coagulated. The "decidual formation" which he finds round some sinuses is absent round those vessels into which villi have been carried by "deportation." This is not difficult to explain, assuming that his "decidual formation" was in reality trophoblast. Where villi have entered veins and penetrated some distance along their interior, as he described, we would not expect to find trophoblast. The trophoblast opened the vessel origin-

ally, but when the villus travelled along the vein it naturally got beyond the limits of the trophoblast area.

Thus we see that recent writers, with the exception of Veit, are agreed that decidual cells, if found at all in the placental site, are not found there in large numbers, and that we cannot talk of a decidua serotina, or to use the more modern term, a decidua basalis, in the tube. Whether the few enlarged connective-tissue cells which are found are to be called "decidual" cells, or "decidua-like" cells, is a matter of little importance, the main point being that although a decidua may be formed later, as described by Both (6), it comes too late to be of use to the developing ovum.

In Both's case of an eight months' pregnancy, originally tubal, "almost the whole stroma of the tubal folds was changed into decidua. In some places the decidual cells lay directly on the muscle." This decidual formation became less and less marked as the placental site was approached. In the folds over the placental site there were only a few single decidual cells.

In my own sections decidual cells are found in some of the folds, in some cases close to the ovum, in others only at a distance from it, the number of decidual cells varying immensely in different cases, in one case being sufficiently numerous to form a compact layer. In the subepithelial tissue between the folds there are a few decidual cells, usually single, in small groups in one case. In the placental site itself no decidual cells are found.

"Decidua-like" cells, *i. e.* connective-tissue cells considerably enlarged but not to a size comparable with that of the decidual cells found in the folds, and in an intrauterine decidua, but otherwise very much resembling these cells, are found in the intermuscular connective tissue in some specimens, not in all. They are not sufficiently numerous to form a "compacta." Heinsius describes similar appearances.

Some of my sections also show collections of large round cells on the peritoneal surface of the tube, as has

been observed by Orthmann (31), Webster (41), and others. In one specimen cells very much resembling decidual cells, oval or spindle-shaped, are found on the peritoneal surface. The small tubular spaces, lined with cubical epithelium, under the peritoneal covering of the tube, which have been noted by Orthmann, Webster, and Zedel (46), are also very well seen in some of my sections. They seem to be more frequently met with in pregnant than in non-pregnant tubes. Possibly the reason for this is that they take part in the general hypertrophy and hyperplasia of all the elements of the tube-wall in tubal pregnancy, and so become more noticeable. I quite agree with Clarence Webster, who considers that they are most probably embryonic in origin, and that serial sections do not prove them to be the ends of deep recesses of tubal mucosa, as Orthmann considered, or sections across folds of peritoneum, as suggested by Zedel.

I would suggest the following as means of distinguishing between Langhans' cells and decidual cells:

The nuclei.—The nuclei of Langhans' cells are larger and stain better than those of decidual cells. They exhibit a "bladder-like" appearance and a fine chromatin network, and usually a nucleolus can be seen in them.

The nuclei of decidual cells are smaller and do not stain so well. They may later show a "bladder-like" appearance, but not until a period in pregnancy when the Langhans' cells have disappeared except from some of the villi. A chromatin network is seen in the nuclei of both varieties of cells.

The cell-bodies.—The protoplasm of Langhans' cells is clearer than that of decidual cells, and does not take up so much eosin. A fine network is seen in the protoplasm. The cell borders are well marked.

The protoplasm of decidual cells in early pregnancy stains better than that of Langhans' cells; it is granular. If a network can be seen in the protoplasm of decidual cells the meshes are usually much smaller than those in the protoplasm of Langhans' cells. The cell-borders of

decidual cells are much less distinct than are those of Langhans' cells. Intercellular tissue is much more commonly seen in groups of decidual cells than in groups of Langhans' cells.

As regards shape and size, it is difficult to point out any distinguishing characteristics, except that Langhans' cells are likely to be polyhedral, decidual cells rounded or oval. When in doubt as to which variety any given cells belong it is best to trace their connection, if possible, with neighbouring cells about which one is certain. Thus atypical cells can often be proved to be in reality Langhans' cells by carefully tracing the continuity between the doubtful cells and neighbouring typical trophoblast masses. We must freely admit, however, that it is sometimes impossible to be certain whether we should call isolated cells decidual or ectoblastic.

It was formerly considered that a fertilised ovum could only become attached to an already formed decidual tissue, *e. g.* Webster's (41) theory was that tubal pregnancy was only possible when the ovum found decidual tissue in the tube. This theory could not now be considered valid even if the tube did produce a decidua at the beginning of pregnancy. Recent investigations show that in the uterus decidual formation follows the attachment of the ovum, *i. e.* that decidual changes are not present before the ovum has made its way into the tissue of the endometrium.

Peters (33), in his description of the earliest described intra-uterine pregnancy, says: "The connective-tissue stroma of the mucosa shows beginning decidual characters only in the immediate neighbourhood of the ovum, and even there a completely formed decidua is not found."

As I have myself seen, even in one field, under a two-thirds-of-an-inch lens, the decidual change can be seen to diminish and become almost unrecognisable in the neighbourhood of a very young ovum, being well marked close to the ovum, but only in a very narrow zone.

The establishment of the fact that the embedding of a

fertilised ovum determines the formation of decidua, and not that the presence of an already formed decidua makes the embedding possible, does away with one great difficulty that must have presented itself to many minds, viz. how can a fertilised ovum, which is free and not in intimate connection with any part of the maternal organism, produce an effect on the endometrium?

Having seen that in the tube there is no decidua comparable to that found in the uterus, we come now to the question—What difference is there in the embedding of the ovum in the two organs? The main difference in the embedding is explained by the difference in the soil. In the uterus there is a thick vascular mucous membrane, the endometrium, into which the ovum can sink. The endometrium undergoes decidual changes, increases in thickness to a considerable extent, and in volume, apart from thickness, to a very great extent as the uterus enlarges. In it can be formed the intervillous space; it contains very numerous capillaries and small arteries and veins. If bleeding occurs when these are opened up by the trophoblast it is small in amount and not a source of danger to the ovum. In the decidua is formed the placenta, which can be separated smoothly without leaving portions behind.

In the tube, on the other hand, except in the folds of mucous membrane, which are not large enough to contain the growing ovum, there is very little if any connective tissue between the surface epithelium and the muscle, and this connective tissue does not undergo decidual changes early in pregnancy. The trophoblast, therefore, burrows into the muscle. Some of the vessels with which it comes in contact are large, and when these are opened up, the pressure of the blood-stream is often able to break down the resistance offered by the fœtal cell-mass, with the result that hæmorrhage into the ovum is a common occurrence in tubal pregnancy. Besides this, the tissues which first contain the ovum do not increase in size to an extent at all comparable with that occurring in the

uterine tissues. There is hypertrophy and hyperplasia of the tubal muscle and connective tissue, but there is neither decidual formation nor increase of tissue comparable in amount with that seen in the uterus. Consequently the ovum grows too fast for the tissues containing it, and often destroys the wall of the tube until it reaches the peritoneal covering, which itself may also be perforated.

The deep intra-muscular site of the villi in tubal pregnancy may be compared to that in the rare cases of placenta accreta, described by Neumann (29) and others.

Neumann's account of this rare condition described complete absence of decidua serotina, in places, with consequently deep intra-muscular seat of some of the chorionic villi. The placenta could not be completely separated during life, and after death removal of the adherent portions of the placenta was only possible when some of the uterine muscle was torn away at the same time. Microscopically no evidence of inflammation could be found.

It has only been shown in recent years that the ovum is submucous, *i. e.* is entirely outside the tube lumen, unless bleeding has occurred and broken down the partition which separates the ovum from the lumen. If the pregnant tube in its fresh state is slit up longitudinally the ovum will always appear to be in the lumen. If, however, the whole tube is hardened and then a transverse section is made through the tube and the contained ovum, it may be seen, sometimes even macroscopically, that the lumen is quite distinct from the cavity in the tube wall which contains the ovum.

The "reflexa" has been a great source of controversy. According to the old ideas regarding the method of attachment of the ovum to the endometrium, the reflexa was built up round the ovum, the ovum itself being passive.

Füth (13), in 1898, described a two and a half weeks' tubal ovum, which was entirely outside the lumen of the tube, being separated from it by a "capsularis," which possessed an epithelial covering and muscle-fibre. The

ovum was between the circular and longitudinal layers of muscle. It had been suggested that what had formerly been described as decidua reflexa really consisted of folds of tubal mucous membrane. Füth contends that the presence of well-marked muscle-fibres in the "capsularis" excludes the possibility of the latter being formed only out of tubal folds. Inter-columnar embedding, *i. e.* embedding between two tubal folds, would only account for the presence of a few muscular fibres in the capsule.

Werth (44) considered that the depth to which the ovum reached, and the apparent disappearance of the tubal muscle, which seemed to have been "devoured" by the ovum, were proofs that the latter had actively bored its way into the tube-wall.

Aschoff (3), in 1899, describes a pseudo-reflexa, containing some of the internal muscular layer, its surface being formed by tubal folds.

Füth (14), in 1901, supports his original statement that the capsule contains muscle, and says that the only way to explain it is to accept Peters' (33) ideas as to the embedding of the human ovum, which agree with those of Graf Spee, Opitz (30), and others, as regards the embedding of the ovum in guinea-pigs.

Heinsius (16), in 1901, finds the ovum entirely outside the lumen of the tube. Between the ovum and the lumen is a thick layer of muscle. On the other side the ovum comes close up to the peritoneal coat of the tube. In one case the lumen was absolutely intact except in one microscopical spot.

Peters (33), in his examination of the earliest human intra-uterine ovum that has yet been described, found that the ovum was in the substance of the endometrium, entirely below the level of the epithelium. The epithelium was intact except in one minute spot, where it had been perforated by the ovum. The gap in the epithelium was roofed over by connective tissue and blood-clot.

It has been suggested that the ovum sinks into the endometrium by its own weight. Even if we agreed with

this view, which to me personally seems to be very unlikely to be a correct explanation of the sub-epithelial site of the ovum, we could hardly imagine the ovum passively sinking into the tubal muscle by its own weight. The deep intra-muscular seat of the tubal ovum can only be explained as being due to an active process, on the part of the trophoblast. If it be admitted that there is no decidua vera in the tube in early tubal pregnancy, there can be no decidua reflexa formed by the building up of a wall round the ovum. Thus the modern idea of the reflexa or capsularis is very different from that which was accepted a few years ago.

According to the latest ideas regarding the embedding of the ovum in the tube, the "reflexa," capsularis, or partition sheet consists at first of blood-clot, and later, as the ovum bores its way deeper, and also expands laterally, of muscle and mucous membrane, except in one minute spot, the original place where the mucous membrane was perforated by the ovum. Here there is probably organised connective tissue. Muscular tissue was recognised in this capsule, by Füth (13) before Peters' work on the embedding of the ovum was published, but its presence could not be satisfactorily explained until the latter's account of the embedding of the ovum was accepted. As Füth pointed out, the theory that tubal folds met over the ovum would not explain the presence of more than a few muscular fibres in the capsularis. In the large majority of specimens a perfect "capsularis" cannot be found, because the median part of it has been destroyed. In many sections, however, towards either lateral pole of the ovum the capsule can be well seen. I have seen several sections showing this capsule, consisting of muscle and mucous membrane. Even when bleeding has occurred and has burst through the median, the thinnest part of the "capsularis," it can usually be seen in my sections that the ovum itself is outside the lumen, although the latter contains blood-clot.

There are three possible ways in which the ovum may become embedded.

1. Columnar embedding, *i. e.* embedding in a fold of mucous membrane.

Kreisch (18) and Werth (44) have each described a case in which this method occurred. In Werth's case a very early abortion was the result. It is probable that this method of embedding usually leads to early abortion, the fold not being large enough to contain a growing ovum, and that cases which clinically appear to be tubal abortions, though the tube is normal on naked-eye examination, are to be explained in this way. It is impossible to say, in a tube which contains blood, that one fold of mucous membrane has not contained an early ovum, unless the whole length of the tube has been examined by serial sections.

2. The ovum might become caught between two folds, and attached to both of them, without having any attachment to the mucous membrane between their bases.

What has been said with regard to columnar embedding would probably apply here, except that the ovum would be able to develop a little further before breaking through into the lumen of the tube.

3. Inter-columnar embedding, *i. e.* embedding in the mucous membrane between the bases of two folds. This is probably the most common site of attachment for the ovum.

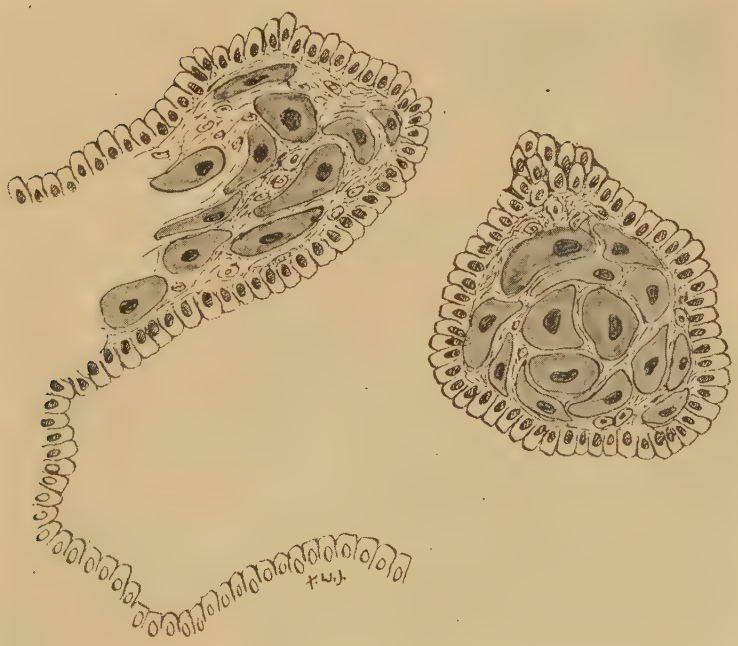
The Trophoblast.

In sections of pregnant tubes, up to six weeks or more, a thick cell layer, consisting of Langhans' cells and syncytium, is seen all round the ovum, in intimate connection with which are the ends of some of the villi (Fig. 4). On the other side is the tubal muscle. These proliferated ectoblastic cells, the trophoblasts, were seen first in the tube, and the proliferation was looked on as pathological. It is now well known, however, that exactly the same cell layer is seen in uterine pregnancy. After a time—

probably about six to eight weeks—this cell layer disappears, very little remains of it being found, except at the ends of the villi.

The real nature of the cells composing this layer was first pointed out by Kühne (20), who, in 1899, showed

Fig. 3.



Tubal fold showing decidual cells. × 500.

Tubal fold cut obliquely, showing decidual cells. × 500.

that what Clarence Webster (41) and others had called decidual cells in the placental site were in reality Langhans' cells. He described the manner in which these cells break through into vessels, many of which are seen to possess muscular and elastic tissue in their walls only on the side remote from the ovum. By this "substitution" of the

vessel walls by fœtal cells the resistance of the walls is much diminished, so that it can be overcome by the force of the blood-stream.

Aschoff (3), in 1899, says that the thick cell layer which covers the surface of the placental site consists of proliferated fœtal cells. He considers that its appearances support Marchand's views that the two forms of cells have a common origin, or may each become transformed into the other (*ineinander übergehen*), that the syncytium can separate off into isolated cells which penetrate the maternal tissues. The proliferating cell masses penetrate the muscular layer into the vascular subserous tissue. Very characteristic is the relation of the fœtal cells to the vessels. As a rule the side of the vessel towards the tube lumen is first destroyed, so that one half of the vessel wall is made up of a fœtal cell-mass, the other half of maternal tissue.

Heinsius (16), in 1901, says the greatly proliferated cell-sheet clothes the whole of the ovum cavity, on the side towards the lumen often only in a loose, broken, single layer, on the side towards the peritoneum in a close many-layered sheet. It advances between the muscle-bundles, pressing them apart. The vessel walls are gradually worn through by its advance. Many vessels can be seen which have the ectodermal cells only in their muscular coat, others which have these cells also between the muscle and the endothelium, others again which have the cells inside the lumen itself.

Peters (33) describes the early intra-uterine trophoblast as consisting of a mass of cells in which there are very numerous lacunæ filled with fluid blood. Into this cell-sheet are pushed mesoblastic processes. The cells even at this very early stage, four or five days, show great variations in shape, size, and staining powers. From the simple cubical cells of the central sheet of trophoblast all transition forms can be traced up to the giant-cells on the surface. He says there can be no doubt that these changes in the trophoblast cells are the

preliminary stages in the formation of the later syncytium. The endothelium of the capillaries disappears before the trophoblast cells.

At this point it is best to say a few words on the most recent account of the growth of the placenta, given by Hitschmann and Lindenthal (47) at the Congress at Carlsbad, in September, 1902. The trophoblasts, *i.e.* the proliferated ectoblast cells which at first are all more or less alike, but later become differentiated into two groups of cells, Langhans' cells and syncytium, are the only active agents in destroying maternal tissue. They are not found after about the sixth or seventh week. The villi are formed by projection of processes of mesoblast into these cell-masses, these processes obtaining a double covering of cells, the inner layer, *i.e.* that next to the mesoblastic stroma, being Langhans' cells, the outer syncytium. The villi which are formed in this way, and are in direct connection with the maternal tissues, are what used to be known as "Haft-Zotten." After the disappearance of the trophoblast the placenta cannot increase in size by taking in more maternal tissue; increase in size can only be caused by growth of the part of the uterus forming the placental site. Any new villi formed after the sixth or seventh week merely project into the intervillous space, they do not invade maternal tissue.

Thus, according to the most modern ideas, we can no longer speak of the destructive action of *villi*, the maternal tissues are destroyed by trophoblast. To distinguish the cells on a perfectly formed villus from those of the cell-mass into which the mesoblastic process was pushed, it is best to talk of the double layer of cells as "villous epithelium," leaving the term "trophoblast" for the cell-mass.

Comparing the intra-uterine trophoblast, as described by Peters (33), with that seen in the tube, the two are found to be exactly alike. The fœtal part of the placenta in tubal pregnancy is just like that seen in uterine pregnancy. The proliferation of the trophoblast cells is not

pathological, the abnormal penetrating action seen in the tube is due not to any inherent quality of tubal trophoblast but to the conditions which it finds. It burrows into the tissue with which it is in contact, and this tissue is, not connective tissue as in the uterus, but muscle. It bores its way into the muscle, and in some cases destroys the muscle and the peritoneum beyond it. This penetrating action, which, if occurring to the same degree in the uterus is looked on as pathological, if not malignant, must, in the tube, be considered normal, if, as questioned by Kühne (20), anything in tubal pregnancy can be considered normal.

The swollen condition of the stroma of the villi, which Kühne noted as being suggestive of hydatidiform mole, is explained by the fact that in his specimens the embryo had been dead for a long time before the tube was removed. A similar condition of the villous stroma is not infrequently seen in cases of missed abortion.

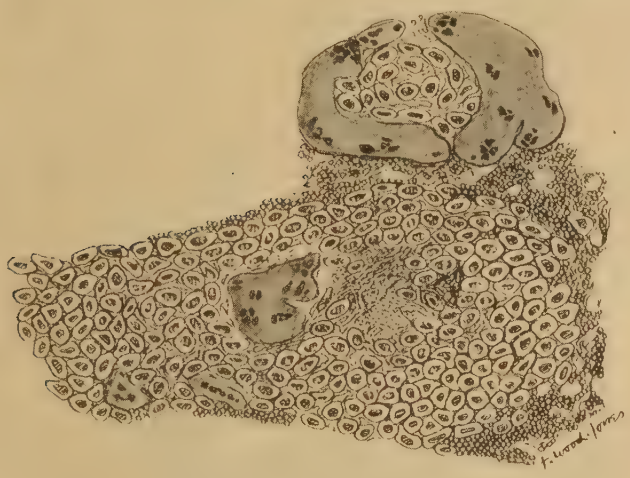
As regards Veit's (40) contention that the fœtal cells do not destroy maternal tissue there are numberless sections showing vessels, the walls of which on the side towards the ovum have been completely "substituted," the place of muscle, connective tissue, elastic tissue, and endothelium having been taken by fœtal cells (Fig. 5). Veit, in 1901, denies that the trophoblast can destroy maternal tissue, and objects to the comparison of the process of the embedding of the ovum to the spread of a malignant growth. He considers that the villi enter veins, pushing against the walls of the veins, inverting them, but does not explain how the openings in the walls take place. His views as to the presence of villi in veins have received confirmation in a paper by Poten (35), who found villi or portions of villi in the veins in the uterine wall at the end of pregnancy. I have seen villi in veins, separated from the intervillous space by a layer of muscle, in the case of tubal pregnancy.

Ulesko Stroganowa (39) finds that Nitabuch's fibrin is poorly developed in the tubal placenta. She sees in this

fact one reason for the deep penetration of the villi, and also for the frequent occurrence of hæmorrhages into the ovum and into the tube.

The large majority of observers do not seem to have noticed anything remarkable about Nitabuch's fibrin in the tube. Heinsius says that "in many places, at the periphery, the proliferating Langhans' cells seem to be

Fig. 4.



(Side of vessel towards ovum.)
Mass of fœtal ectoblastic cells, Langhans' cells and syncytium, in the wall of a pregnant tube. × 250.

bounded by one or more bands of fibrin, though these cannot be said to be a definite obstruction to the former's proliferating propensities." Kühne (20) says "where the fœtal epiblast penetrates most deeply, there is the fibrin of Nitabuch weakest."

Since Clarence Webster (41), whose "proliferated endothelium" is generally considered to have been in reality trophoblast, Mandl (23) is the only writer on tubal

pregnancy who has described proliferation of the endothelium of the maternal vessels as being well marked. Mandl's description is not convincing. There is not the

FIG. 5.
Side of vessel towards ovum.

(Side of vessel remote from ovum.)
Showing a maternal vessel in the wall of a pregnant tube attacked by trophoblast. × 250.
The vessel wall has almost entirely disappeared, having been replaced by fœtal cells.

slightest doubt that proliferation of the endothelium of some of the maternal vessels does sometimes occur, as is seen in some of my sections, but what very slight pro-

liferation there is is of no evident importance. In other words "trophospongia," as described by Hubrecht in the hedgehog, is not found in the human female.

Clarence Webster's (41) account of the phagocytic action of the trophoblast, published in 1895, comes very near the generally accepted view of to-day, which is based on more recent work. It seems to me that the German writers who have followed him have not given him sufficient credit for this part of his work, which, read in the light of later investigations, is one of the most interesting in his book. The explanation is probably that even in the original his meaning is somewhat obscure. He describes (1) proliferated endothelial cells, from the maternal vessels, proceeding outwards into the surrounding decidual tissue, and (2) proliferated fœtal cells proceeding down to the maternal vessels. He calls the former cells "trophospongia," the latter "trophoblast." He says that previous writers have confused the two groups of cells, but does not explain how one is to avoid falling into this error, and apparently falls into it himself. Possibly the German translation of his book has not made this part of it any clearer.

Webster's "trophoblast" is not quite the same as the "trophoblast" of to-day. The term is now applied to the original undifferentiated cell-mass which covers the whole surface of the early ovum, the chorionic ectoblast. He applied the term to only a special portion of this cell-mass, already differentiated into a "nucleated protoplasmic mass." However, he himself considers it probable that this "plasmodial" character represents a "degenerated condition of the cell-mass." He says: "Whether the plasmodial character of the protoplasm in my sections is the same in its first-formed condition, or whether it represents some degree of change, cannot be absolutely proved, though the probability is that it represents a degenerated condition of the cell-mass." It has been left to later investigators of younger ova to show that the original cell-mass is undifferentiated, and that what Webster

called "trophoblast" is a product of this cell-mass, as he thought probable.

Kühne (20) points out that Webster's trophospongia, epithelial layer, and decidual cells all have the same origin, viz. from the fœtal ectoblast, but his idea of the trophoblast and its functions, not absolutely correct, but at any rate pointing in the right direction, seems to have been lost sight of, so much so that some German writers are of the opinion that "trophoblast," as applied to the human ovum, is a term for which German authors are responsible.

Webster described the phagocytic action of the trophoblasts as eating through "the decidual tissue between the surface and the nearest sinuses, the blood thereby being allowed to escape slowly into the spaces between the early villi." He does not explain *how* the sinuses are opened. It is now known that the destructive action of the trophoblast goes farther than he thought, and opens the vessels themselves.

The Causes of Abortion and Rupture.

The cause of rupture was formerly considered to be the stretching which the wall of the tube underwent, either from the increase in size of the growing ovum, or from bleeding into the tube without free means of exit for the blood. The condition of tubal abortion was first fully described by Werth (43) in 1888. He described a specimen in which the tube, which was not ruptured, contained a dead ovum. There had been intra-peritoneal bleeding from the tube. He remarked that intra-peritoneal hæmorrhage in tubal pregnancy had always been associated with rupture of the tube, and that such a condition as the one which he described, which he considered comparable to uterine abortion, had hardly been taken into consideration. Very few other cases had been reported.

Martin, in 1893 (25) and 1895 (26) described sixteen cases of tubal abortion. In fourteen the place of insertion was in the ampullary end of the tube. In many cases muscular contraction was out of the question owing

to extreme thinning of the muscle and adhesions of the tube. The expulsion of the ovum in these cases, he considered, must have been brought about by bleeding alone. He described two varieties.

1. There may be great hæmorrhage, in which case the ovum and the blood leave the tube together by the ostium abdominale. This is less common than—

2. There is less amount of bleeding between the tube wall and the ovum. The bleeding stops on account of pressure. The ovum is usually destroyed. There may be several layers of clot, denoting repeated hæmorrhages.

He saw two cases in which both rupture and abortion occurred in the same tube. His explanation of these cases is that abortion occurred first, the abdominal ostium then became plugged by clot so that the increased pressure was sufficient to cause rupture. Abortion is more common than rupture. The latter only occurs when the abdominal ostium is closed, or when the ovum is situated very deeply, *e. g.* in a "hernia" of the mucous membrane.

Orthmann (32), in 1894, pointed out than an *unusual* thinning or stretching of the tube-wall must take place before rupture can occur. That the growth of the ovum alone, in an otherwise normal tube, can exert such a strong stretching power as to lead to rupture is at least improbable, and advanced cases of pregnancy in which the ovum is still contained in the tube speak against this explanation of rupture. The cases where only a small part of the tube is concerned in forming the gestation sac, either on account of implantation of the ovum in a diverticulum, or of a very tortuous course of the tube with kinking, come under a different category.

Leopold had described villi projecting into the tubal muscle, reaching right up to the peritoneum. Orthmann doubts that normal villi can have this power. That pathological villi may bore deep into the muscle is quite another matter, and a case was reported by v. Recklinghausen (37) and Freund, in which villi, which had undergone "myxomatous degeneration" had perforated the

tube wall. As a rule some extra pressure is needed to cause rupture of the tube, and this pressure is produced by bleeding, usually from a vessel, or vessels, in the placental site. If, when bleeding occurs, the resistance of the tube wall is slight, rupture will be the result; if this resistance is great, abortion. Another resistance must be taken into account, viz. that which tends to prevent the blood from escaping by the ostium abdominale, *e. g.* atresia of the ostium or obstruction of the lumen. Rupture may be secondary to abortion, as Orthmann considers is proved in one of his specimens where great dilatation of the tube, eventually leading to rupture, took place behind an S-shaped bend in the tube.

Rupture usually takes place at the placental site, because here is the source of the bleeding, and here the tube wall has usually to withstand the greatest pressure. If the blood can escape at the sides of the placental site rupture may be averted, at any rate for a time.

Martin (25) says: "The so-called tubal abortion has only this in common with uterine, that the emptying takes place by means of natural openings. The uterine ovum is expelled by uterine contractions, the tubal on account of bleeding into its place of insertion." Orthmann (32) contends that by "abortion" we understand simply a premature interruption of pregnancy. The causes of tubal abortion are, as a rule, identical with those of uterine abortion. A really complete abortion is rare, though it may occur. The so-called complete abortions usually leave behind a fragment of placenta.

The incomplete abortions may be divided into two classes, viz. those in which the whole ovum, converted into a blood or fleshy-mole, remains in the tube, and those in which only the embryo escapes, the rest of the ovum remaining in the tube. The causes of tubal abortion are two in number:

1. Contraction of the tube. This must often be impossible, on account of either thinning of the tube wall, presence of coagulated blood between the layers of muscle,

or firm, general adhesions. This cause cannot have been active when there has been no expulsion of the ovum.

2. Loosening of the attachments of the ovum by hæmorrhage.

Prochownick (36), in 1895, agrees with Orthmann that rupture is often, if not usually, secondary to abortion.

Dührssen (10), in 1897, considers that rupture frequently occurs after the death of the ovum. He divides the varieties of rupture thus:

1. Rupture with a living fœtus, the rupture being caused by the progressive growth of the ovum.

The other four occur after the death of the embryo.

2. Bleeding into the fœtal membranes, frequently causing such great increase of pressure as to produce rupture of the thinned wall of the tube.

3. Free bleeding into the tube without means of exit, *e. g.* adhesion of ostium abdominale to the ovary.

4. Bleeding between the decidua serotina and the ovum, with a strong reflexa.

5. Overstretching of the pregnant part of the tube, brought about by contraction of the uterine end of the tube while the abdominal end is fixed by adhesions.

Nos. 2 and 4 may occur with a patent ostium abdominale.

Kühne (20), in 1899, considered that blood in the intervillous space was pathological, and, when it occurred, a cause of abortion.

Aschoff (4), in 1900, considers that small ruptures, caused by destruction of the tube wall by the growing villi, are common, but are often unnoticed, being concealed by blood-clot, and later by fibrin and connective tissue. He does not consider the presence of blood in the intervillous space to be pathological. He considers abortion to result from rupture of large vessels whose walls have been weakened by invasion of fœtal cells. He points out that the vessels are larger and less well supported in the tube than in the uterus, there being no surrounding decidua. The rupture is caused by increase

of blood-pressure, due, he thinks, in many cases to menstruation. Tearing of the pseudo-reflexa he considers another frequent cause of abortion. All *early* ruptures are necessarily in the part of the tube wall where the placenta is attached. Abortion and rupture are both due to the same thing, destruction of maternal tissues by the proliferating chorionic cells.

Ulesko Stroganowa (39), in 1900, considers that the poor development of Nitabuch's fibrin is a cause of bleeding into the ovum. She points out also, as does Aschoff (4), that rupture is much more common than most authors assert, small ruptures on the placental site, due to destructive action of villi, being often patched up by blood-clot. Large ruptures, she considers, due to stretching of the tube wall, are usually outside the placental site.

Heinsius (16), in 1901, considers that gradual rupture into the lumen of the tube, *i. e.* abortion, may be prevented, for a time at least, by layers of fibrin in just the same way as has been described by Aschoff and Ulesko Stroganowa in "concealed ruptures" on the peritoneal surface. Whether rupture shall take place or abortion is determined by the direction in which is the most marked proliferation of fœtal ectodermal cells, *i. e.* it depends on which wall is the more thinned, the partition sheet or the wall of the tube. Usually, for rupture to be brought about, there must be a sudden increase of pressure, *e. g.* by opening a large vessel, which increases the size of an already existing opening in the tube wall. Secondary rupture may occur in a tube in which abortion has already taken place. Contractions of still active muscle may lead to abortion by tearing through the connections of the ovum, or tearing the "partition sheet."

Krönig (19), in 1901, says that the latest researches show that the clearly drawn distinction of the text-books between abortion and rupture cannot be upheld. When bleeding occurs, the result, whether rupture shall occur or abortion, depends on the amount of destruction of the tube wall.

In discussing the causes of rupture of the pregnant tube we must divide them into the causes of early ruptures, *i. e.* up to about seven weeks, and those of later rupture. The cause of early rupture is chiefly the eroding action of the trophoblast. The trophoblast may bore through the deepest layer of muscle and through the peritoneum, thus directly causing rupture. If the intervillous space is not opened up the rupture may be patched up in the manner described by Aschoff (4) and Ulesko Stroganowa (39).

If, however, the intervillous space be opened, bleeding occurs into the peritoneal cavity, or into the tissues of the broad ligament. It is probable that there may be first subperitoneal hæmorrhage, the peritoneal covering of the tube not giving way until a subperitoneal hæmatoma has been formed. Besides this direct method of rupture, the trophoblast may bring about rupture in a more indirect manner. As has been already said, and as Aschoff pointed out, the trophoblast meets with large vessels in the tube wall, and in some cases, as can be seen in some of my sections, attacks the walls of these large vessels in just the same way as it does those of smaller vessels (Fig. 5). If the wall of one of these vessels gives way as the result of the destructive action of the trophoblast, the increase of pressure in the ovum-containing cavity may rupture the external wall of the tube, which itself has been thinned by the same destructive process. This method would seem to explain those cases of tubal rupture in which an artery is seen spirting at the place of rupture.

Mechanical causes, such as straining, examination, etc., may also rupture the tube, the wall of which has been thinned by the trophoblast, either directly, or, by rupturing vessels whose walls have been weakened in the same way, indirectly. Whether among these mechanical causes we ought to number contraction of the tube itself it is impossible to say. The fact that early ruptures usually, if not always, involve the placental site, is

evidence in favour of the view that these ruptures are brought about by the trophoblast.

In later ruptures the mechanical causes alone can be considered. The trophoblast, normally, ceases to exist, or, at any rate, to destroy maternal tissues, after the seventh or eighth week, and there is no evidence that villi when once formed can exert any destructive action apart from trophoblast. But the tube wall has been much thinned, and a further cause of thinning of the tube wall is now present in the stretching due to the growth of the ovum. The mechanical causes can act now in the same way as before, rupturing the tube directly or indirectly.

When we come to consider the causes of tubal abortion it is impossible to separate them from those of rupture. If the trophoblast breaks through the capsularis directly into the lumen of the tube, or the vessel walls which have been weakened by trophoblast give way and the resulting bleeding breaks through the capsularis, the result is abortion. The greater frequency of abortion is explained by the fact that the capsularis is much thinner originally than the tube wall on the other side of the ovum. The frequent occurrence of *incomplete* abortion is easily explained when one considers the depth at which some of the villi are situated. When the ovum is torn away from the tube wall it is almost certain that some of these deeply situated villi will be left behind.

The occurrence of rupture in a tube in which abortion has already taken place must be explained thus:—Abortion first occurred; then, no means of exit for the blood being present on account of the abdominal ostium being either closed by adhesions or plugged by clot, the increased pressure in the tube is sufficient to cause rupture, usually at the placental site.

Conclusions.

1. Decidual formation in the tube does not occur in the early months of pregnancy to an extent comparable

to that in the uterus. In many tubes the formation of a compact layer of decidua is anatomically impossible.

2. The site of the ovum is outside the lumen in the tubal muscle. It seems impossible to explain this deep site except as due to the eroding action of the trophoblast.

3. The vessels are opened by the trophoblast.

4. Rupture and abortion are mainly brought about by the destructive action of the trophoblast.

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Dr. Eden said that Dr. Andrews was to be heartily congratulated upon the interesting and important contribution he had laid before the Society. So many points were raised that criticism of the paper was difficult, but he would like to make one or two remarks upon the mode of implantation of the tubal ovum as described by the author of the paper. On reading what Dr. Andrews had to say upon this point he had been struck with the fact that there was remarkably little direct evidence in support of the contention that the ovum was implanted at the muscular layer of the tubal wall. With the exception of the case described by Füth, there was practically no evidence at all in support of it; possibly the specimen shown to the Society that evening by Dr. Cuthbert Lockyer would confirm Füth's conclusions, but at present it was impossible to speak definitely upon the point. On the other hand, it was to be borne in mind that the French school, as represented by Couvelaire and Cornil, entirely contravened Füth's position; it seemed to him that Dr. Andrews had not done justice to the important work of Couvelaire. His monograph, 'Études anatomiques sur les grossesses Tubaires,' was the most important work on the subject which had appeared since Clarence Webster's 'Ectopic Pregnancy,' yet Dr. Russell Andrews had not made any mention of it in his paper. Couvelaire's view was that the tubal ovum was never completely embedded in the tubal wall, as the uterine ovum was in the uterine wall, but remained with its outer pole uncovered, except by an adventitious layer of fibrin; this he called the "free pole" of the ovum, and described its relations with great minuteness. This decided difference of opinion upon a

question of fact between Füth and Couvelaire appeared at first sight to be very perplexing, but it was possible that the explanation was to be found in the fact that Füth's ovum was much younger than any examined by Couvelaire. Our experience in regard to the uterine ovum had taught us that developmental questions could only be solved by the examination of very early specimens; deductions drawn from appearances found at later stages were very apt to be erroneous. He therefore welcomed the appearance of Dr. Cuthbert Lockyer's specimen, which ought to yield important evidence upon this point.

Another point he wished to refer to was Dr. Russell Andrews' use of the expression that the tubal ovum developed *outside the lumen of the tube.* This appeared to him to be a clumsy and *bizarre* expression, and it did not in any way add to the accuracy of our conception of tubal pregnancy. Since Peters had shown that the uterine ovum buried itself in the decidua and developed there, it would be equally accurate to speak of the uterine ovum as developing outside the cavity of the uterus, but no one proposed to do so. He thought the point Dr. Andrews should try to emphasise was that he regarded tubal implantation as intramuscular, and uterine implantation as intra-decidual.

Dr. Cuthbert Lockyer showed a case of incomplete tubal abortion which demonstrated the mode of implantation of the ovum in the wall of the tube. The specimen illustrated very clearly one of the most important points of Dr. Russell Andrews' paper, viz. that the manner in which the impregnated ovum burrows by means of its trophoblast through the mucosa and into the muscle of the tube wall and there develops outside the lumen is strictly analogous to what normally takes place in the uterus, as proved by Peters' specimen of early uterine pregnancy. Peters showed the fallacy of the older ideas regarding the mode of formation of decidua reflexa, in which the ovum was regarded as a passive cell which acquired a covering of decidua by the latter growing upon all sides to enclose it. Peters proved that the ovum, by means of its trophoblast, penetrates the endometrium, and Dr. Lockyer's specimen proved that the same process takes place in the tube when the impregnated ovum lodges in that structure. The value of this specimen lay in the fact that the capsularis of the placenta was complete, and this Dr. Lockyer believes affords a hitherto unique observation; it negatives the view of Couvelaire that one pole of the ovum remains uncovered by a capsule derived from the wall of the tube. Couvelaire's researches were carried out on material derived from older specimens of tubal pregnancy than the one exhibited by Dr. Lockyer. In the latter the placenta had a diameter of half a centimetre only, and neither hæmorrhage had taken place in the placental tissue nor blood had escaped into the lumen of the tube; consequently the placental capsule, which

projected into the lumen, was uninjured by mechanical pressure, and as a consequence its microscopical structures were easily demonstrated.

The sections were illustrated by coloured drawings.

Mr. TARGETT had examined four cases of very early rupture of a gestation sac in the isthmus or narrowest part of the tube. In one of these cases rupture occurred on the seventeenth day after a single coitus (rape). They all showed extensive destruction of the muscular coat by the phagocytic action of the fœtal epithelium, and ultimate rupture of the serous membrane. He had also examined a considerable number of ampullary gestations, most of which were tubal moles, and in none of them was there anything at all comparable to a uterine decidua, either beneath or around the ovum. He doubted whether the muscular coat would be penetrated so early in the ampullary gestation as in that of the isthmus, because in the former situation the ovum had much more room to expand.

Dr. RUSSELL ANDREWS thanked the Fellows for the way in which they had received his paper. He had not had access to Couvelaire's monograph while writing his paper, but had read it since. He did not consider that what might be called the German theory of the formation of the "capsularis" was disposed of by Couvelaire's description of the membrane covering the "free pole" of the ovum. He had seen serial sections which proved the presence of muscle in the "capsularis." He quite admitted that in the majority of specimens it was impossible to demonstrate a perfect "capsularis," because the majority of specimens were spoilt by bleeding. He considered Dr. Cuthbert Lockyer's specimen an exceedingly interesting one, as showing a thin layer of muscle between the ovum and the lumen of the tube.

JUNE 4TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—57 Fellows and 21 visitors.

Books were presented by the Middlesex Hospital Staff and Dr. Otto Engström.

Maud Mary Chadburn, M.D., and Robert Adrian Ironside, M.D., were admitted Fellows of the Society.

John C. Holdich Leicester, M.D., Capt. I.M.S. (Calcutta); and John Furneaux Jordan, F.R.C.S. (Birmingham), were declared admitted.

THE FOLLOWING SPECIMENS WERE SHOWN BEARING ON THE SUBJECT OF CHORIO-EPITHELIOMA.

SECTIONS FROM TWO DIFFERENT CASES OF ENDOSTEAL SARCOMA OF THE FEMUR, SHOWING SYNCYTIAL STRUCTURES.

Shown by Dr. F. W. ANDREWES.

THE two growths are malignant in type, having nothing in common with myeloid sarcomata. They are mixed-celled sarcomata, with numerous large, irregular, multinucleate masses of protoplasm. The term "syncytial sarcoma" would be applicable to them.

It is not pretended that these tumours are quite like

the classical form of "chorionepithelioma." They are simply shown as illustrations of syncytial tumours having no connection with a pregnancy (see also p. 300).

CHORIO-EPITHELIOMA.

Two specimens shown by Dr. H. Russell Andrews.

1. This specimen has been in the London Hospital Museum for many years, labelled "A uterus showing in its interior a large irregular patch of ulceration, with raised edges and a slightly fungating surface, probably cancerous."

Microscopical sections show much shrinking, and not much clearness of detail. Syncytium, much vacuolated, and Langhans's cells can, however, be well seen in some places, and the general structure leaves no room for doubt that the growth is a chorio-epithelioma.

2. Three growths in uterine wall and two in vagina. The patient was aged 50. Her last pregnancy was eleven years before the appearance of the uterine growth. There were numerous secondary growths in the lungs.

The case was published in the 'Obstet. Soc. Trans.' in 1886 by Dr. Lewers, as "Circumscribed Sarcoma of the Uterus."

Microscopically are seen—(1) necrotic tissue, some of it apparently muscle, and fibrin; (2) a loose, very palely staining meshwork of connective tissue resembling the stroma of chorionic villi; (3) bands and masses of plasmodial structure, much vacuolated, containing deeply stained nuclei; (4) large rounded cells with well-marked outlines, large nuclei, and in places strikingly clear protoplasm; (5) blood. Whether actual villi are present or not is difficult to determine, but I think the relation of the syncytium to the loose stroma is very suggestive of villi (see also p. 314).

CHORIONEPITHELIOMA.

Shown by Dr. Henry Briggs.

Dr. Briggs showed a specimen of chorionepithelioma from a case in which the disease was combined with sepsis and associated with a hydatidiform mole.

Mrs. B—, aged 43, gave a normal menstrual and obstetrical history. Free from abortions, she had borne ten children.

During many recent months her husband's intense business worry had disturbed her general health. She became almost sleepless, and lost flesh.

Pregnancy occurred, and she loathed its continuance. The commencement of the pregnancy was either May 9th or June 30th, 1900; the latter was the last day of a delayed and curtailed blood loss. On and after September 7th the pregnancy was complicated by continuous hæmorrhage, which further reduced the feeble general health of the patient, until on October 12th an almost death-like pallor of the lips was observed. On that day, when Dr. Briggs first saw her with her own doctor, the uterus was judged to be harder than normal, smaller than the size of a pregnancy dating from May 9th, and larger than a pregnancy dating from June 30th; ballottement was absent.

The provisional diagnosis of hydatidiform mole was made, and three gum-elastic bougies were placed *in utero*, as it was feared that the loss of blood from immediate digital extraction might be fatal. The mole was expelled on the evening of the next day.

Then followed a month's slight and continuous blood loss, occasional rises in temperature, and no improvement in general health until November 12th, when Dr. Briggs again saw the patient and digitally explored the interior of the uterus, wherein was found an excavating ulcer with indurated raised edges. On November 28th the uterus was extirpated *per vaginam*.

The patient only survived the operation eight days. A necropsy was not allowed.

The morbid condition of the uterus was thoroughly investigated by the Ethel Boyce Scholar in Gynæcological and Obstetrical Pathology, Dr. J. Effie Prowse. The disease was chorionepithelioma (see Report of Pathology Committee, p. 255).

CARNEOUS MOLE RETAINED *IN UTERO* FIVE MONTHS AFTER DEATH OF EMBRYO, SHOWING PROLIFERATION OF EPITHELIUM OF VILLI AS A SYNCYTIUM FORMING RETICULATING PROCESSES.

Shown by Dr. A. L. Galabin.

Patient aged 40. After two months' amenorrhœa she had slight sanguineous discharge for five months; no menstruation. Uterus was found slightly enlarged. A carneous mole was evacuated, of about the size of an ovum at two months' pregnancy, containing a minute embryo. Patient had no further trouble.

Shown to illustrate prolonged vitality of chorionic villi without malignancy.

VESICULAR MOLE, SHOWING SYNCYTIUM DERIVED FROM CHORIONIC EPITHELIUM PARTIALLY DIFFERENTIATED INTO CELLS.

Shown by Dr. A. L. Galabin.

The specimen is an ordinary vesicular mole, not showing any tendency to malignancy, and is shown in support of the view that cells resembling the discrete cells seen in decidu-

oma malignum may be derived from superficial chorionic epithelium, not from Langhans's layer, nor from decidua (see also p. 305).

MYXOMA OF FUNDUS UTERI FOLLOWING VESICULAR MOLE. ? A MYXOMA OF CHORIONIC VILLI ENGRAFTED UPON UTERUS.

Shown by Dr. A. L. Galabin.

Patient aged 48. Sanguineous discharge began after three months' amenorrhœa. An ordinary vesicular mole was extracted from the uterus. The patient continued to pass round lumps of jelly mixed with blood. On exploration the uterus was found much enlarged, with an excavated depression in its interior, from which soft gelatinous material was evacuated. This showed no chorionic villi, but had the structure of myxoma. For several months the uterus continued to enlarge, hæmorrhage continued, and the case appeared to be running a malignant course. After the uterus had been cleared out four times, a cure followed, the menopause became established, and the patient was alive and well ten years later.

N.B.—This case occurred long before deciduoma malignum was described (see Report of Pathology Committee, p. 254).

CHORIONEPITHELIOMA.

Shown by Drs. A. L. Galabin and Thomas G. Stevens.

The growth was diagnosed five months after the expulsion of a hydatidiform mole. Symptoms: only irregular hæmorrhages and consequent anæmia. Death occurred five days after vaginal hysterectomy.

The growth is that usually known as the typical form of chorionepithelioma, and consists of masses of clear, discrete cells, apparently identical with those of the Langhans's layer, and syncytial giant-cell masses (see also p. 303).

UTERUS REMOVED BY VAGINAL HYSTERECTOMY, SHOWING NODULE OF CHORIO-EPITHELIOMA.

Shown by Dr. F. W. N. Haultain.

The specimen was removed in November, 1898, six weeks after expulsion of a myxomatous mole, a previous curetting having shown characteristic cells and syncytial masses, and been followed by recurrence of violent hæmorrhage. Complete recovery. Patient still in robust health (see also p. 297).

DECIDUOMA MALIGNUM (MALIGNANT HYDATID MOLE).

Shown by Dr. J. B. Hellier.

Removed from a primipara aged 28 years. Ceased to menstruate in February, 1902. On March 28th severe hæmorrhage, and an abortion thought to have occurred. Recurrent attacks of hæmorrhage till June 26th. Uterus then of size of four-months pregnancy. On examination the curette passed through softened wall of uterus. Abdominal panhysterectomy immediately performed. Died eleven weeks after operation from pyæmia and severe hæmorrhage from vagina.

Uterus contains a large polypoid mass of cystic mole and clot, with solid areas of growth. Uterine wall invaded

by chorionic villi and growth. Syncytium present, but not very abundant (see Report of Pathology Committee, p. 254).

DECIDUOMA MALIGNUM.

Shown by Dr. T. Arthur Helme.

The uterus and upper part of vagina (laid open in front), with Fallopian tubes and ovaries and perimetric tissues, are shown. The inner surface of uterus is covered by the new growth, which has penetrated the muscularis and in two places perforated the peritoneal covering of fundus. Both lungs, studded with metastatic growths, are shown; metastases are also present in the vaginal wall (see also p. 301, and Report of Pathology Committee, p. 255). Microscopic sections were also shown.

DECIDUOMA MALIGNUM *WITHOUT* SYNCYTIUM; SECONDARY DEPOSITS IN VAGINA, LYMPHATIC GLANDS (ILIAC AND LUMBAR), AND LUNGS, AFTER HYDATIDIFORM DEGENERATION OF THE CHORION.

Shown by Dr. Peter Horrocks.

History.—In March, 1902, patient (aged 27) began to suffer from irregular hæmorrhage. This went on till July, 1902, when labour pains came on with severe hæmorrhage, and a "vesicular mole" was expelled. Menstruation came on normally, and remained so for three months. November, 1902, seems to be the beginning of her later hæmorrhages; she continued to bleed until her death, which took place on February 12th, 1903. On admission into Guy's Hospital (January 31st, 1903) patient was extremely anæmic, but there was not very great wasting; she had

been suffering from hæmoptysis for three weeks, and this continued till death. The uterus was fixed, and reached above umbilicus. Patient bled freely on examination. There was difficulty in passing urine, and the temperature averaged about 104° F.

Description of specimen.—The primary growth is mostly confined to the anterior wall of the uterus, the cavity of the uterus being exposed from the front. The vagina has been opened posteriorly, and shows the large growth covered with mucous membrane and invading the urethra. There is also another secondary deposit in the lateral wall of the vagina. The iliac glands are affected, and there are several glands implicated and shown in the specimen at the base of the mesometria. The lungs show a diffuse lobular growth, each patch of growth being of about the size of a pea. The secondary growths are of the same hæmorrhagic type as the primary growth.

The microscope sections fail to show any syncytium. There is much necrotic tissue present, but in places there are large clear cells, irregular in shape, some spindle and some round, with a clearly defined nucleus. These large cells invade the intermuscular planes; in the lung they are situated mostly round the vessels (see also p. 296).

CHORIONEPITHELIOMA.

Shown by Dr. J. M. Munro Kerr.

Specimen was removed from a young married woman, aged 23. She had had no family, and always had good health. A miscarriage occurred in September, 1901. On account of bleeding she was *curetted in March and May*, 1902, on the last occasion by Professor Murdoch Cameron, who removed a large quantity of *débris*, supposed to be placental tissue; bleeding then ceased and temperature

became less febrile for a time. When patient passed into Dr. Munro Kerr's hands there was another bleeding. The uterus was explored with the finger, and a large mass was found up at fundus. The diagnosis of chorionepithelioma was made and the uterus was removed. The patient died shortly after operation. A *post-mortem* examination was not allowed.

The growth presented all the appearances of a typical chorionepithelioma (see also p. 276).

DECIDUOMA MALIGNUM.

Two specimens shown by Dr. A. H. N. Lewers.

1. Bleeding after three-months miscarriage. Piece of placenta removed. A fortnight later a tumour appeared in one labium, and another in the vagina. Death six weeks later with masses of growth in uterus and vagina, and numerous secondary growths in the lungs, one in one kidney. Sections show syncytium and Langhans's cells.

2. Vaginal hysterectomy in 1896. Good recovery; no recurrence up to present time.

Reported in 'Obst. Soc. Trans,' vol. xxviii. Examined by a committee and decided to be "deciduoma malignum."

A CASE OF CHORIO-EPITHELIOMA WITH SECONDARY GROWTHS IN VAGINA, KIDNEY, PANCREAS, LUNGS, AND ? LYMPHATIC GLANDS.

Shown by Dr. Cuthbert Lockyer.

History of the case.—Patient aged 26, secundipara. The first pregnancy occurred in 1893, and ended in the expulsion of a hydatidiform mole. The second took place on

October 4th, 1898; the child was born at full term and was healthy; the labour was tedious; the placenta, being adherent, was detached piecemeal. Three weeks later a swelling appeared in the left groin, with temperature 102·2° F. This was thought to be a puerperal abscess, but on incision only blood and bloody *débris* escaped. Other growths made their appearance in the right labium and in the vaginal wall. Bimanual examination showed the uterus to reach 1½ inches above the symphysis; it was freely mobile; there were no abnormalities to be felt through the fornices. A free, blood-stained, offensive discharge escaped from the subinvoluted uterus. The swelling in the right labium broke down and discharged similar material to that found on incising the left inguinal glands. The patient was admitted into the Hospital for Women, Brighton, under Dr. Sanderson, on December 5th, 1898. She died on January 26th, 1899, with symptoms of septic absorption and pulmonary complications, the latter being noticed only fourteen days before death, when patches of consolidation were found throughout both lungs. There is no systematic record of urine analysis, but on admission it was free from albumen.

At the autopsy Dr. Hobhouse found a "small nodule" of growth in the left kidney, and on the posterior surface of the right kidney was "a nodule similar to those seen in the lungs."

In the lungs there were numerous dark red nodules, of which microscopical sections have been prepared, showing all the features of chorio-epithelioma.

"Both head and tail of the pancreas were occupied by considerable craggy masses of new growth, the body being free. There were one or two involved glands in the neighbourhood" (Hobhouse). The pancreatic growth has been examined microscopically. It contains more syncytium than either the primary growth or those in lungs and vagina.

The primary growth occupied the entire cavity of the body of the uterus, but did not invade the cervix. It had

caused no perforation of the uterine serous coat. It was proved microscopically to be a chorio-epithelioma.

The vaginal growth lay deep in the connective tissues. Healthy squamous epithelium and a thick layer of fibro-muscular tissue lay between it and the surface.

The "involved lymphatic glands" and the renal "growths" were not sent for examination.

I am indebted to my friend Mr. H. H. P. Johnson, late Resident House Surgeon at the Hospital for Women, Brighton, for the notes of this case (see also p. 313).

DECIDUOMA MALIGNUM.

Shown by Dr. F. J. McCann.

The uterus was removed from a patient after the menopause, aged 53 (*vide* 'Journal of Obstetrics and Gynæcology,' March, 1903). The uterine cavity is occupied by blood-clot. The growth, as proved by microscopical examination, exists between the blood-clot and the uterine wall. The central portion of the posterior uterine wall is invaded by the growth to such an extent that well-marked thinning is noted. The growth has invaded the uterine walls in an irregular manner, so that the outline of the central blood-clot is lobulated. The cervix is not affected (see also p. 310).

Report of Pathology Committee.—"An example of deciduoma malignum. Typical syncytium and discrete cells are present." *

* 'Trans. of the Obstet. Soc. of London,' vol. xliv, p. 296.

DECIDUOMA MALIGNUM WITH SECONDARY DEPOSIT IN VAGINA; LUNGS SHOWING SECONDARY DEPOSITS.*

Shown by Dr. F. J. McCann.

The specimens were obtained from a patient, aged 46 years, who died in hospital. The uterus is lined by a series of nodules, which were undergoing necrotic changes. A secondary deposit is seen in the anterior wall of the vagina. The nodules (secondary deposits) are seen in the lung.

Microscopical examination shows typical multinucleated protoplasmic masses, together with large rounded nucleated cells (see also p. 310).

DECIDUOMA MALIGNUM.*

Shown by Dr. F. J. McCann.

The uterus was removed by vaginal hysterectomy on July 17th, 1901. *Patient, whose age was* 35 *years, has remained in good health; no evidence of recurrence.*

The growth, which was covered by intact mucous membrane, was assuming a polypoid shape. The irregularity at the lower part of the growth was caused by manipulations during the digital exploration.

The growth is seen to invade the uterine wall, whilst the wall itself is hypertrophied.

Note the dark maroon colour of the growth on section. It was extremely soft in consistence.

Microscopical examination. — Well-marked syncytial masses and discrete cells (see also p. 310).

* 'Journal of Obstetrics and Gynæcology of the British Empire,' vol. iv, No. 1, pp. 80, 81.

SECONDARY GROWTH FROM VAGINA OF DECIDUOMA MALIGNUM.

Shown by Mr. Rutherford Morison.

Case 1.—Female aged 24. Last child 2¼ years ago. Bleeding has been almost constant ever since confinement. Eleven weeks ago the tumour appeared in the vagina on its posterior wall. Growth excised, but rapidly recurred. Uterus enlarged with growth to size of three-months gestation.

Death five months later (see Report of Pathology Committee, p. 254).

DECIDUOMA MALIGNUM OF UTERUS.

Shown by Mr. Rutherford Morison.

Case 2.—Female aged 32. Ten weeks before admission had severe abdominal pain and flooding; passed something "fleshy." Red foul discharge continued till admission. Soft polypoid growth protruding from uterus into vagina. Hysterectomy. The growth found springing from fundus uteri, not infiltrating wall of uterus. *Quite well three years after operation.*

Case 3.—Female aged 39. Last child four years ago. Had severe uterine hæmorrhage for two months; was curetted, but hæmorrhage recurred seven weeks later. Vaginal hysterectomy. Death eleven months after operation, from recurrence (see Report of Pathology Committee, p. 254).

EMBRYOMA OF ANTERIOR MEDIASTINUM IN A MALE ADULT.

Shown by Dr. James Ritchie.

(Introduced by Dr. T. W. Eden.)

The specimen includes the thoracic viscera removed from a young man aged 24. In the anterior mediastinum and growing down over the front of the heart is a tumour. The lower part consists of an irregularly shaped dermoid cyst containing sebaceous material and fine short hairs. The upper part is solid, and shows many hæmorrhages. There are a number of secondary tumours in both lungs (a few such secondary growths were present also in the liver and spleen). For the structure of this tumour see the microscopic preparations (see also p. 300).

DECIDUOMA MALIGNUM.

Shown by Dr. Herbert Spencer.

The growth is seen in the body and cervix. This was the first case observed in Great Britain. Observed in 1889 at University College Hospital, published in 1895 and 1896 at the Obstetrical Society of London.

The drawings show the naked-eye appearances and the microscopic character of the growth in the body, cervix, and lungs (see 'Obstet. Trans.,' 1895, p. 240; 1896, p. 135).

DECIDUOMA MALIGNUM.

Shown by Lieut.-Col. A. J. Sturmer, I.M.S.

A uterus removed by vaginal hysterectomy from a Hindu multipara aged 29, whose last child was born two years previously. Patient had amenorrhœa for two months after her last confinement, and then "passed a lump and some clots," and has had hæmorrhage and offensive discharge since.

As the uterus was enlarged and full of an offensive growth, it was removed on December 13th, 1902. On January 3rd and following three days, and again on 14th for two days, she had rigors and pyæmia. The uterus is shown, and the new growth is seen to be in the lower segment of the body of the uterus. Capt. Kirkpatrick, I.M.S., reports the case to be deciduoma malignum.

Report by Dr. Cuthbert Lockyer.

The uterus is small. It arrived in formalin solution, and has probably shrunk considerably since removal. From fundus to cervix it measures $3\frac{1}{4}$ inches; from cornu to cornu the width is 3 inches. The wall of the body of the uterus is $\frac{3}{4}$ inch in thickness at its widest part. The growth has invaded the entire endometrium of the body, and has spread downwards beyond the internal os and invaded the cervix on the right side to within half an inch of the external os uteri. Its limitation below is sharply defined, the mucous membrane of the cervix being raised to form an irregular edge around the growth. The corporeal growth forms two lateral tiers with a deep cleft running centrally between them. Each vertical tier is composed of tortuous bosses or lobes; those lobes belonging to the right side can be seen to project into the uterine wall when the latter is viewed in section. It is from one of these "invasions" that the sections for microscopical examination have been prepared.

The uterine wall is nowhere completely perforated; the peritoneal surface is intact. The appendages are healthy. No sign of adhesions can be found on the external surface of the uterus.

Microscopical report.—The sections taken from the junction of the growth with the uterine wall show that the former is made up of Langhans's cells capped extensively by bands of syncytium, and lying amidst old and recent blood-clot, and also necrotic tissue. At the attachment of the tumour to the muscle wall, the latter is widely infiltrated by round-cells. Beyond this area of inflammatory "reaction" the muscle is very œdematous. There are no malignant wandering cells to be seen in any of the blood-vessels external to the growth, but the former have very thick walls, the increase in thickness being due to an addition of fibrous tissue in the muscular layers.

CHORIONEPITHELIOMA MALIGNUM, WITH SECONDARY GROWTHS IN LIVER.

Shown by Dr. John H. Teacher, for Professor Sutherland and Dr. Buist.

CHORIONEPITHELIOMA MALIGNUM; PRIMARY TUMOUR IN UTERUS.

Shown by Dr. John H. Teacher.

From the case of Dr. Edgar. Shows a pouting mass of dark brown material, chiefly blood-clot, which filled the upper part of the cavity of the uterus. The tumour principally formed a thin layer between the clot and the uterine muscle. Patient aged 32, nullipara. Followed an abortion. Operation 12½ months after abortion. Death 10 months after operation (see also p. 275).

CHORIONEPITHELIOMA MALIGNUM; TWO PHOTOGRAPHS OF PELVIC ORGANS WITH PRIMARY TUMOUR, AND A GLASS TUBE CONTAINING A SECONDARY NODULE FROM THE LUNGS.

Shown by Dr. John H. Teacher.

From case Kelly and Teacher, 1897 ('Journ. Path. and Bact.,' 1898).

Patient aged 27, 2-para. Followed abortion. No radical operation. Death in about four months. Secondary tumours in vagina, broad ligaments, Fallopian tube, and lungs (see also p. 274).

SYNCYTIOMA FROM THE BODY OF A WOMAN WHO DIED IN ST. BARTHOLOMEW'S HOSPITAL THIRTY-ONE YEARS AGO.

Shown by Dr. Herbert Williamson.

This specimen has been in St. Bartholomew's Hospital Museum for thirty-one years, and, on re-investigation, proves to be a typical syncytioma. There is a complete clinical and *post-mortem* record. The patient was delivered of a vesicular mole fifteen months before her death.

In the record of the *post-mortem* examination these are described:—"Tuberculous masses in the lungs." "Pyæmic abcesses in the liver." "Hæmatomata of the vaginal wall." Microscopic sections were shown.

REPORT OF PATHOLOGY COMMITTEE.

Report on Specimens exhibited at the June meeting of the Society on the occasion of the Discussion on Chorion-epithelioma.

We, the undersigned, agree that the microscopic slide of the metastasis from Case 2, described by Mr. Rutherford Morison (p. 249), clearly shows that the specimen is one of chorionepithelioma, as it contains syncytial masses and Langhans's cells. With regard to the other cases, we are unable to give a definite opinion, owing to the unsatisfactory nature of the sections submitted to us. Also with regard to Dr. Galabin's cast of "myxoma of uterus following a vesicular mole" (p. 241), we cannot express any opinion owing to the changes in the specimen due to its age. In the case of Dr. Hellier's (p. 242) four slides, the section taken from the wall of uterus at site of perforation shows fibrotic chorionic villi embedded in fibrinous clot and penetrating into the necrotic muscular tissue of the uterine wall, but not reaching the peritoneal surface. The villi are covered by actively budding syncytium, but there is no proliferation of the cells of Langhans's layer. In the sections of the polypoid mass in uterus, the bulk of the tissue is made up of vesicular chorionic villi, showing marked proliferation of the cells of Langhans's layer, together with a certain amount of syncytial budding. There is extensive round-celled infiltration into the areas of necrotic *débris* in which the villi lie embedded. The main feature of the section of the recurrent nodule in the vaginal cicatrix is the large amount of syncytium, which forms vacuolated bands around areas of growth composed of Langhans's cells. A few villi can be seen. The muscular tissue is infiltrated with syncytial derivative and intermediate cells. We

regard this growth as a chorionepithelioma developed in a vesicular mole.

T. W. Eden.
J. S. Fairbairn.
Corrie Keep.
J. H. Targett.
Herbert R. Spencer.
Alban Doran, *Chairman.*

Report on Dr. Briggs' Specimen of Chorio-epithelioma.

We have examined the microscopic sections of this specimen (p. 239), one of which shows a typical chorionic villus in the muscular tissue of the uterus. This villus is myxomatous in the centre, and the surrounding muscle is sparsely infiltrated with single cells or groups of cells like the discrete elements of a chorio-epithelioma.

In another section of the uterine wall the endometrium is replaced by blood-clot and fibrinous material much infiltrated with leucocytes. Large discrete cells are invading the muscular tissue, but no typical masses of syncytium are present.

We are of the opinion that this specimen has the structure of a malignant vesicular mole.

G. Bellingham Smith.
Herbert R. Spencer.
J. H. Targett.

Report on Dr. Helme's Specimen of Uterine Growth.

We have examined the sections of this growth (p. 243), and are of the opinion that its structure very closely resembles that of a round-celled sarcoma. The cellular elements are variable in size and shape. Most of them are comparatively small and polyhedral, the nuclei staining deeply; others are larger, and a few contain two or more nuclei. But there is no syncytium, and no cells like those of Langhans's layer.

The growth is very vascular, having much blood extravasated into its tissues.

G. Bellingham Smith.
Herbert R. Spencer.
J. H. Targett.

July 10th, 1903.

ON CHORIONEPITHELIOMA (THE SO-CALLED DECIDUOMA MALIGNUM) AND THE OCCURRENCE OF CHORIONEPITHELIOMATOUS AND HYDATIDIFORM-MOLE-LIKE STRUCTURES IN TUMOURS OF THE TESTIS.

By John H. Teacher, M.A., M.B., C.M.

UNDERKEEPER IN THE PATHOLOGICAL DEPARTMENT, HUNTERIAN MUSEUM, UNIVERSITY OF GLASGOW.

(Received January 19th, 1903.)

Part I.—Introduction.

In looking over English works in which the subject of Deciduoma Malignum is mentioned, one could hardly fail to be struck, if he should happen to have some knowledge of the work that has been done on it, with the utterly unsatisfactory nature of the accounts which are given of that curious disease. In the majority of these works the knowledge of the authors seems to have been arrested somewhere about 1896, and the most constant stumbling-block has been the decision of the London Obstetrical Society, as the outcome of the discussion which they held in that year, that these tumours were only sarcomata of the uterus.

This was the impression of the author after some time spent last summer in working up the literature of the subject with a view to a second publication on it. He also noticed that whereas almost all recorders of cases have taken the view that it was an entity worthy of a special name, those writing or demonstrating in London have either accepted that decision or, having taken other views, have been referred to it as if it was the last word that could be said on the matter. In spite of the great

changes that passed over opinion regarding deciduoma malignum within the two or three years following that discussion, and the practical certainty that has been reached as to its nature, no proper reconsideration of the subject has been held in London. His object, then, in asking to be allowed to present the three new cases which he has obtained in Glasgow since October, 1901, was to provoke a new discussion, for which the time seemed fully ripe.

Deciduoma malignum, or chorionepithelioma, may be defined for purposes of discussion as follows:—It is a malignant tumour developing in the body of the uterus about the time of a confinement or abortion. Clinically, it is characterised by the occurrence of severe hæmorrhages, progressive anæmia, and cachexia, and it results, if left to itself, in death within a period which may vary from weeks to months. The gross anatomy of the cases shows hæmorrhagic tumour in the uterus, and metastatic growths, which also show a hæmorrhagic character, and are most common in the vaginal veins and the lungs. Histologically, it consists of masses of well-defined cells of various shapes and sizes closely packed together, and large, multinucleated, irregular masses of protoplasm in which no definite cell boundaries are recognisable. This tissue invades and destroys the uterine tissues after the manner of a malignant growth. It contains no proper connective-tissue stroma or blood-vessels of its own, but it specially seems to attack the uterine blood-vessels, and its mode of dissemination is by the blood-stream.

According to the most commonly accepted view, the connection with the pregnancy is essential, and the tumour is a quite peculiar growth originating from a structure peculiar to the gravid uterus, viz. the epithelium of the chorionic villus. According to the London Obstetrical Society it is merely a sarcoma of the body of the uterus, and the connection with pregnancy is accidental.

The discussion in the Society took place at a time of great confusion of opinion as to the disease. Two years later the aspect of things had totally altered, and it seems

to me a great pity, considering the negative character of their decision, the criticisms to which it had been subjected, and the practical as well as scientific importance of a correct appreciation of the disease, that the Society did not accept the advice offered by Marchand in his second paper in 1898, and of Fraenkel in 1899, in the discussion on Dr. Williamson's paper on "Hydatidiform Disease of the Chorion," and reconsider the whole subject long ago. Writing shortly before the publication of Marchand's second paper, Dr. J. K. Kelly and I had no hesitation in coming to conclusions very different from those of the Society and identical with those of Marchand.

At the time I approached the Society I was on the point of starting on a visit to the German schools, and I made a point of seeing as many as possible of the original cases, visiting the leading writers who have treated of it, and also visiting those who had the best material for the study of human placentation.

The following are the results of my inquiries:

1. A great deal of interest is taken in the so-called "English view," which came out chiefly in the form of an expression of opinion that it needed revisal.

2. Although cases of deciduoma malignum were objects of considerable interest to German pathologists, it was not on account of the problem as to its nature or origin; this is regarded as settled by the demonstration in numerous cases of the actual development of the growth out of the epithelium of the chorionic villus. But there are many points yet unsettled, of which one may mention the difficulty of accounting for cases in which tumour has developed outside of the area of implantation of the ovum, and the problem of diagnosing the disease early enough to give a chance of successful treatment, yet avoiding the danger of needless radical operation — an extremely difficult matter!

3. Although the name "deciduoma malignum" is often used, the view implied by it is completely abandoned in favour of that of Marchand expressed in the term "chorionepithelioma."

There is no need to take up and dissect the discussion of 1896. All the points will come up incidentally, but one must be referred to specially. Attending the Versammlung Deutscher Naturforscher und Aerzte in Carlsbad (in September, 1902), I became acquainted with certain recent discoveries, which had greatly increased the interest felt in the subject. These were contained in a paper published in May, 1902, by Friedrich Schlagenhaufer, of Vienna. He described two cases of malignant tumour of the testis, in which were found structures identical histologically and in their behaviour to adjacent tissues with chorionepithelioma, and in one of them structures closely resembling hydatidiform mole were present, which had spread from the testicular tumour into the veins and even into the cavities of the heart. Schlagenhaufer's cases formed the subject of a lively discussion in the pathological section of the Congress, and I have since then had the pleasure of meeting him in Vienna and further examining his cases; and he gave me preparations which I show to-night.

Schlagenhaufer's conclusion was that the tumours are teratomata. In August there appeared a paper by a Russian, Wlassov, in which three tumours similar to Schlagenhaufer's first one were described; and he also quite independently concluded that they were teratomata. These tumours are of great interest in themselves. For this Society they have a special interest, for in them apparently we meet again the "sarcoma" of the testis which was shown to the Committee of the Society by the late Professor Kanthack and Dr. Eden, and which provided one of the reasons for the decision of the Committee.

Part II.—The Physiological Prototype of Chorionepithelioma.

It was allowable to question the essentiality of the connection with pregnancy in 1896. Now, so many cases

have been described in which this is beyond question, that it is hardly worth while discussing the matter. There are many cases in which the point is not clear, but one is quite justified in treating them as exceptional. At any rate all the doubtful ones occurred within the child-bearing epoch; some of the earlier unsatisfactory ones are also now admitted not to have been chorionepitheliomata at all. The relationship to the pregnancy remains to be considered.

The original opinion of Sänger, that these tumours originated from the decidua cells, is practically dead. So far the Society seems to have been right. But there remain the view, usually identified with the name of Marchand, that it is a tumour arising from the epithelium of the chorionic villi, and that, which may be called the view of Veit, that it is a sarcoma of the body of the uterus complicated by an after-coming pregnancy. Veit also admits the occurrence of chorionic tissues in certain (at least) of these cases, but regards them as not the essence of the tumour. The difference between these views comes to hinge on the interpretation of certain appearances seen in the normal human placenta, viz. whether certain structures are of fœtal or of maternal origin. That is to say that the nature of chorionepithelioma is dependent on the nature and origin of the chorionic epithelium, and of the so-called "syncytial wandering cells" in the decidua.

The state of our knowledge is far more favourable to a consistent explanation than it was in 1896. Everyone is agreed that the decidua is a maternal tissue; the wandering cells may be left on one side just now. As to the chorionic epithelium, while it was agreed that there were two layers in it, there was much difference of opinion about the nature and origin of these layers. Langhans, in his classical description of the chorionic epithelium, regarded the inner layer (Langhans's layer), composed of distinct cubical clear cells, as fœtal mesoblast; and the outer (the syncytium), consisting of a layer of homogeneous, opaque, multinucleated protoplasm in which there were no

definite cell boundaries, he regarded as fœtal epiblast (ectoblast). But he abandoned his view, and along with many others regarded the syncytium as a proliferation of the uterine epithelium, and the Langhans-layer cells as of fœtal epiblastic origin. The view that both were of fœtal epiblastic, and therefore of common origin, which had been held by Minot and Kastchenko, was generally discredited in Germany. In this country, Hart and Gulland and Clarence Webster maintained the fœtal epiblastic origin of both layers as the result of investigation of human placentæ of four weeks and upwards. In comparative anatomy this view also found favour with Hubrecht in Holland, van Beneden in Belgium, and Duval in France.

It is not necessary to go further into the old views, as, with the exception of the last, they have been disproved by the work of Siegenbeek van Heukelom and Hubert Peters on early human ova. The whole chorionic epithelium is fœtal epiblast, the primitive type of cells being the cubical, well-defined, epithelial Langhans-layer cells, which in contact with the maternal blood of the intervillous spaces are modified into syncytium.

The Hubert Peters ovum is by far the youngest human ovum that has as yet been discovered in the uterus. So different is it from all the others that in certain respects it would have hardly been understandable without the aid of analogies drawn from comparative anatomy.

Various authors had observed that in the embedding of the ovum in rodents and bats the uterine epithelium was destroyed, and the ovum attached itself to the deeper maternal tissues (connective tissues).

In 1889 Hubrecht published a monograph on the placentation in the hedgehog, in which he introduced new ideas and a new terminology, which have had a very great influence on the interpretation of the embryology of the higher mammals, and have been very generally accepted. He demonstrated that the ovum of the hedgehog, while yet in the stage of segmentation, settled in a

hollow in the uterine mucous membrane and proceeded to attach itself. The adjacent epithelium degenerated and disappeared; the mucous membrane swelled up around it, maternal vessels were opened, and blood was effused around it, part of which clotted between the lips of the decidual swelling, shutting off the ovum from the general uterine cavity and thus completing the cavity of the decidua. As segmentation advanced the ovum became differentiated into two classes of cells, an outer set and an inner set.

The outer, the primitive epiblast, proliferated rapidly into a thick layer of cells, and became specialised as an organ for the nutrition of the ovum at the expense of the maternal blood; it took no part whatever in the formation of the actual embryonic shield, which developed out of a knob of the outer layer which is specialised for that purpose, and the inner set of cells. The thick layer of cells he named, on account of its function, the trophoblast (otherwise "trophic epiblast"). In the early stages of development the trophoblastic portion grew much more rapidly than the embryonic portion, and thus the condition was attained of a relatively large nutritive organ enclosing a very small embryonal rudiment. Around the ovum destruction of the maternal tissues occurred to a considerable extent, the degenerated remains probably being used up by the trophoblast for its nourishment. Then equilibrium became established between the destructive action of the trophoblast and the reacting uterine tissues, and union of fœtal and maternal tissues occurred; where maternal blood-vessels had been opened the trophoblast became hollowed out into a sponge-work of cavities containing maternal blood. This did not coagulate; on the contrary, the cavities took the place of vessels and became a part of the maternal circulation, and a primitive placenta was established.

There had been no extension of the maternal endothelium into these cavities to form a lining to them; like the maternal epithelium, the endothelium simply disap-

peared from where it was no longer necessary, and its place was taken by the fœtal cells. Later, the fœtal mesoblast, bearing blood-vessels, entered into combination with the trophoblast, and villi were formed consisting of cores of fœtal mesoblast covered with trophoblast, which thus became the epithelium of the villi, and the cavities in it the intervillous spaces.

Hubrecht forecast that the embedding of the human ovum and the development of the placenta would be found to resemble closely what occurred in the hedgehog. His views as to the attachment of the ovum to maternal connective tissues and the formation of trophoblast, have received confirmation from the work of van Beneden and Duval,* on bats and rabbits; of Graf von Spee, on the guinea-pig; and of himself on the shrew, *Tarsius spectrum* (primates), and *Tupaja* (insectivora). His forecast was accepted as probably correct by Hart and Gulland, who were the first to use his terminology in reference to the human placenta, in 1892, and by Clarence Webster in 1894. In Germany they were much more slowly received, and it is to the credit of the pathologists that they pointed the way to the embryologists. Actual confirmation of his forecast has come only with the Peters ovum, which is the only one observed as yet in which the enclosure of the ovum in the decidua was not complete.

In details, the embedding of the human ovum appears to follow the process described for the guinea-pig by v. Spee. Instead of being enclosed by swelling up of the mucous membrane around it, the ovum appears to bore its way into the mucous membrane, destroying the epithelium and underlying maternal tissues until it has reached a sufficient depth; the hole by which it entered is closed over it by a cap of blood-clot. The Peters ovum shows this state quite clearly. The union of the trophoblast with the maternal connective tissues, and its development into the chorionic epithelium, then proceeds on lines

* The work of Duval on rodents was practically contemporaneous with that of Hubrecht; his results were very similar.

which, in general, are similar to the development in the hedgehog, but probably differ considerably in detail.

The Peters ovum has been much criticised. It has been said that as it was taken from a dead body it could not be fresh enough to be reliable, that it is badly fixed, that it is pathological, and that even it is not early enough to prove the nature of the chorionic epithelium.

As to the first point, it was obtained from the body of a woman who, on the non-appearance of her menses, along with the occurrence of subjective symptoms (vomiting), took caustic potash solution and died in three hours. Three hours later * the uterus had been opened and the ovum removed and placed in Muller's fluid, which at first was changed every hour. The fixation is exceedingly good. It has the faults of Muller's fluid to a slight degree—the nuclear details might be clearer. Altogether, as regards preservation and fixation, it is a thoroughly reliable specimen. The author has compared it with the very best early human ova—those of Graf v. Spee, Leopold, Siegenbeek van Heukelom, and many others not so young. It is not so fine as one of Graf v. Spee's, but is equal or superior to all the rest.

Secondly, no one can say that it is pathological, for there is no other so young with which to compare it. On the other hand, considering it as the youngest member of a series consisting of von Spee's three (one unpublished as yet), and the Siegenbeek van Heukelom ovum, and the two youngest Leopold ova, one can have no hesitation in accepting the opinion of von Spee that it is normal as fully warranted.

As to the last point, since the trophoblast is already united with the maternal tissues, one must admit that there is some force in the criticism; but there is no explanation of the appearances in it which does not present greater difficulties than that offered by Peters. Both by the positive observation that the syncytium develops out

* The exact time is not stated in Prof. Peters' monograph. He told me that it was as stated above, and requested me to let that be known.

of the individual trophoblast cells, which from their characters and relation to the mesoblast of the ovum are clearly epiblast, and by the negative observations that, so far from showing proliferation, the maternal tissues show degeneration where they are in contact with the syncytium, the conclusion is forced on one that the whole trophoblast is of fœtal epiblastic origin. The broad lines of distinction are quite clear. A difficulty there is, which is experienced in all placental research—namely, that the union between the maternal and fœtal is so intimate, and the variety of cell forms that appears in the border zone is so great, that there are some cells about whose origin one would not commit one's self to a decided opinion. Many of them are not unlike decidua cells, and one can quite well speak of transition forms between them and the decidua cells; yet it is plain that by far the most of them are of chorionic epithelial (trophoblastic) origin.

Part III.—The History of Deciduoma Malignum.*

The history of deciduoma malignum, considered as a special disease, begins with the description by Sänger in 1889 of a case of very malignant sarcoma-like growth of the body of the uterus, arising after an abortion in the eighth week. This he regarded not merely as a sarcoma coinciding with a pregnancy, but as a special tumour allied to sarcoma developing from the decidua, and he called it deciduoma malignum. In 1893 he published a monograph on the subject, in which he collected all the earlier described tumours that seemed to present an affinity to his case. Among these were four from the laboratory of Chiari, who had described three of them in 1877 as carcinoma of the uterus complicating pregnancy. These three, along with a new case, had in 1890 been classed together by Pfeiffer (a pupil of Chiari), who had come

* A very full historical account, containing all the views that have been held about these tumours, is given by Münze.

independently to the same conclusions as Sänger, and had also called them deciduoma malignum. The collection also included a number of old cases of destructive hydatidiform moles, of which there had been no proper microscopic examination, and a case described by Gottschalk in which chorionic villi were present. This Gottschalk had described as sarcoma arising from the stroma of the villi and the Langhans layer, which he regarded as of fœtal mesoblastic origin. Sänger divided the cases into three classes:

1. Sarcoma deciduo-cellulare, *i. e.* sarcoma composed of decidua cells, corresponding to the original deciduoma malignum. The name was altered to be more precise by excluding the glands of the decidua, which played no part in the tumour.

2. Sarcoma deciduo-cellulare with participation of chorionic villi:

(*a*) After hydatidiform mole;

(*b*) With sarcomatous condition of the mesoblast of the villi (Gottschalk's tumour, and one of Schmorl's).

3. Malignant hydatidiform moles and placental polyps.

The decidua cells he held to be the essential malignant tissue, and the chorionic elements which were present in the second and third classes he regarded as adventitious.

The sections of the original deciduoma malignum were prepared for Sänger by Schmorl, who also in the next few years contributed short histological notes to the reports of several other cases, which he described more or less after Sänger's view.

The merit of Sänger is that he focussed the attention of gynæcologists and pathologists on the subject, and a number of other cases were soon reported, and for the most part described as deciduomata in the sense of Sänger. Of these, the case reported from Chiari's laboratory by Bacon is important.

Gottschalk, in his full publication in 1894, dissented from the view of Sänger, and emphasised his view that

the disease was originally in the fœtal tissues. In this he really revived the old opinion which had been held about the rare cases of destructive (malignant) hydatidiform moles; *e. g.* the case of H. Meyer (1888) was in 1889 described by Klebs in his 'Text-book of Pathology' as a beautiful example of parasitism—fœtal tissues invading and destroying the maternal.

In 1895 L. Fraenkel reported a case in which the growth consisted almost entirely of syncytium, and he described it as syncytioma malignum, or carcinoma syncytiale, because he regarded it as originating not from the decidua, but from the syncytium of the chorionic epithelium, which he seems to have looked on as a derivative of the uterine epithelium. In the same year Marchand advanced the view that these tumours were composed of cells derived from both layers of the chorionic epithelium; they were therefore, accepting the ruling opinion as to that structure, of mixed maternal and fœtal origin.

In the criticisms of the views of Marchand in the discussion of the London Obstetrical Society, there does not appear to have been any proper appreciation of them. The most has been made of the difficulty of conceiving a tumour of mixed fœtal and maternal origin. This was met by the conception—quite justified—of the chorionic epithelium as so specialised a structure, and the symbiosis of its two elements as so characteristic and essential a physiological feature, that they were entitled to be considered together as if one tissue. It was on this ground, as well as on the grounds of their clinical history, histological structure, behaviour towards adjacent tissues, especially the blood-vessels, and mode of dissemination by the blood-stream—resemblances to both carcinoma and sarcoma,—that Marchand regarded the so-called deciduomata as neither carcinomata nor sarcomata, but as *sui generis*.

Whitridge Williams, of Johns Hopkins Hospital, also in 1895 independently recognised the connection of deciduoma malignum with the chorionic epithelium; but,

while recognising elements resembling the Langhans-layer cells, he considered the syncytium the more important element. He was inclined to regard the latter as a derivative of the uterine epithelium, and considered the fœtal epiblastic nature of the former a difficulty in the way of believing that the individual cells in the tumour could be of this nature; he preferred to leave the question of their nature open.*

The three last-mentioned authors at least agreed in referring the tumour to the chorionic epithelium. As the particular view which has prevailed was that of Marchand, so the origin from the chorionic epithelium has come to be generally associated with his name. It is his view which is now almost universally accepted.

It was founded on the anatomical and physiological resemblances between the chorionic epithelium and the tumour tissues. In the placenta, from about the fourth week onwards the epithelium of the villi is reduced to quite a thin layer, not at all like trophoblast except here and there, especially at the attachment of the villi to the decidua. At these points the Langhans layer spreads out into masses of considerable size, and the syncytium, instead of consisting of a thin rind enclosing the former, may be expanded into multinucleated irregular masses of considerable size. The young growing tumour tissues closely resemble these masses in structure, staining reactions, and the modifications in form which the cells undergo. They also show the faculty of opening maternal blood-vessels, which had long ago been ascribed to the fœtal tissues, and has now been amply demonstrated.

Marchand was also able to produce strong evidence in favour of his opinions from re-investigation of the pathology of hydatidiform mole. He demonstrated that hypertrophy of the epithelium was a constant feature of hydatidiform

* Williams has now accepted the view of Marchand. An excellent statement of the position of this question has been given by him in his 'Obstetrics,' just published. 1903: Appleton and Co., New York.

degeneration of the chorion, and that the occasional malignancy of these moles was dependent on this hypertrophy run to excess after the manner of malignant tumours in general.

The so-called deciduoma malignum, then, on this theory, is just a member of a series of diseased conditions of the chorionic epithelium which shows many varieties, and a progression in degree of malignancy comparable with the progression from adenoma or papilloma to malignant adenoma or papilloma and carcinoma.

The physiological prototype of the tumour, the trophoblast, is an extremely peculiar and active tissue; as observed by Hubert Peters, "The young trophoblast has a striking power of growth, and in respect to its physiological relations in the early stages of embedding of the ovum (destructive effects on the enclosing zone) does indeed manifest a destroying (malignant) action on maternal tissue." Villi in abortions often show a very rich overgrowth of epithelium, the cause and significance of which we do not know; it makes the diagnosis of malignancy a matter of great difficulty.

The actual diseased conditions are as follows:—(1) Simple hydatidiform mole; (2) malignant hydatidiform mole, in which all the elements of the villi are seen, but the epithelium appears to be the active agent of destruction; (3) tumours composed almost entirely of syncytium and individual cells, in which a few villi, either normal as to their mesoblastic cores, or hydatidiform, are seen; (4) the pure chorionepithelioma, in which no trace of fœtal mesoblastic tissue is to be found. The tumours of the third class are the crucial ones, in which the whole of the tumour tissue in all its very varied cell forms can be traced directly to its source. There is no clearer example of the tracing of a tumour to its physiological prototype than chorionepithelioma. Such evidence there is no getting past.

A case of this description, viz. that of Apfelstedt and Aschoff, is referred to in the discussion of 1896. Its im-

portance is recognised in the remarks of Mr. Doran and Dr. Eden, and tacitly in the terms of the decision of the Committee, wherein no reference is made to chorion-epithelioma, but it is merely stated that the tumours shown were sarcomata, that there was nothing in their histological characters to justify the supposition that they were of decidual origin, and that the term deciduoma malignum was therefore an inappropriate one. The origin of the tumour from actual villi was also demonstrated about the same time by Julius Neumann in three cases, and since then many cases in which this can be done have been described, but there is none better than that of Haultain, which was demonstrated in London in 1899 with amazingly little effect.*

Aschoff's paper was remarkable for the study of the placenta, in which, working with material about as young as that of Hart and Gulland, and Webster, he rejected the accepted views and maintained the common origin and fœtal nature of the two layers of the chorionic epithelium. Marchand also, after his first paper, took up the study of the normal placenta for himself, and from his own observations he was, in his paper of 1898, evidently leaning in the same direction, and he has now fully accepted the view that the chorionic epithelium is of fœtal epiblastic origin.

The effect of Marchand's first paper "On the So-called Decidual Tumours," and that "On Hydatidiform Mole," may be characterised as revolutionary. Nearly all new cases since them have been published, and many of the old ones re-described as chorionepitheliomata in the Marchand sense. Schmorl re-examined his sections of the original case of Sänger, and pronounced them to be chorionepithelioma. Sänger† adhered to his old opinion. I show sections of the tumour which were given to me by Schmorl, which the

* In the British Gynæcological Society.

† Since the above was written I have seen what may stand as Sänger's final opinion; it is given by Austerlitz in reporting a case from Sänger's clinic, in Prague: "Sänger accepts in essence the explanation given by Marchand, but with the reservation that the possibility of formation of sarcoma cells out of decidua cells in respect to his first case,

members can judge for themselves. To me it is chorion-epithelioma. Like other chorionepitheliomata, it shows cells which do resemble decidua cells, and one cannot be greatly surprised at Sänger's interpretation of it. The case of Bacon was re-examined by E. Fraenkel and pronounced chorionepithelioma, and this represented the acceptance by Chiari and his school of the view of Marchand.* Gottschalk also in a second paper accepted that view. It has also been accepted by several English, and all Scotch, American, French, Italian, Russian, and Swedish observers who have published cases since 1898.

The champion of the sarcoma view is Veit. Even he admits the essentiality of the connection with pregnancy, and the presence of the fœtal elements in the so-called deciduoma malignum. But he holds, *as a general rule*, that disease of the mother cannot arise from the fœtus; it is always primarily in the mother. Therefore, in 1899, he held that the primary disease in chorionepithelioma (he prefers the old name deciduoma malignum) was sarcoma of the body of the uterus to which a superimposed pregnancy gave special features, such as the syncytial character of some of the cells. He had extirpated the uterus in a case which corresponded clinically to deciduoma. In it there were many villi which showed a very luxuriant growth of the epithelium, and numbers of large cells, many of them multinucleated, in the adjacent uterine tissues. The large cells he regarded as sarcoma cells of maternal origin, constituting the essence of the disease, and the villi as non-essential—merely an accident of the superadded pregnancy. The occurrence of pregnancy in a uterus already the subject of sarcoma of the body has not been demonstrated; this account of the sequence of events (which has been in evidence many years) remains purely hypothetical.

which does not correspond in all points with those of Marchand, cannot be excluded." Chiari makes a similar reservation.

* Verbal communications in various meetings of societies, *e. g.* Carlsbad, 1902, and in conversation with the author.

In 1901 Veit published a new paper on "deportation" of chorionic villi. That the metastasis of tumours has a prototype in the escape (deportation) of villi or portions of villi and fragments of chorionic epithelium into the maternal vessels, has long been known. Formerly it was supposed to occur only in diseases such as puerperal eclampsia, but it has now been observed under such circumstances as to favour the belief that it occurs normally. Usually the deported materials undergo dissolution in the maternal vessels, and give rise to no symptoms; but under conditions about which very little is known, they give rise to those abnormal cases of chorionepithelioma in which the primary tumour is not in the uterus. Veit admits that "deportation" occurs, and that the deported villi may attach themselves to the interior of the maternal blood-vessels just as they attach themselves to the decidua in their normal seat, but only under certain abnormal conditions of the maternal organism. He has satisfied himself that the account of the embedding of the human ovum given by Peters and van Heukelom is probably correct in the main; but he will not admit that the destruction or the infiltration of maternal by fœtal tissues has been demonstrated. The large cells which he sees embedded in the decidua enclosing the normal ovum, and in the walls of the blood-vessels wherever deported villi are attached, he regards as formed *in situ* from maternal elements (practically decidua cells), and not as infiltrating fœtal cells. Infiltration by elements demonstrable as fœtal he had never seen. The thick outgrowth of epithelium of the villi of the Siegenbeek van Heukelom ovum is almost as marked as that on any of the villi in his tumour;* therefore he cannot admit that this in itself is a sign of malignancy—an opinion with which I agree. Infiltration and destruction by demonstrably fœtal cells he would regard as evidence of malignancy.

He admits that the likeness between young trophoblast and young tumour in cases without villi is just as

* In my opinion they are, however, much more regular.

perfect as that between it and the epithelium of the villi in a tumour case like his own. I believe he also admits that it is equally exact between the large cells amid the maternal tissues of the normal placenta or adjacent to a deciduoma, and many cells of the chorionic epithelium in the intervillous space or in the cell masses of the tumour; but he denies the genetic continuity between the two. Most workers on the subject have no difficulty in tracing it. Certainly the origin of these cells, and also their destructive action on the tissues in which they are seen, is very plain in my cases of chorion-epithelioma.

Intermediate (transition?) forms between these syncytial wandering cells, so called, and almost any of the neighbouring maternal cells can be found by a diligent search; but that is very different from the obvious continuity which exists between them and the chorionic epithelium. Menge believed that he had traced his tumour to the muscle-cells, and Williams at first thought he could do the same in his case, but further study led him to point out that this was an error. K. Winkler has recently supported some such ideas, but his papers are such a mass of inaccuracies that no weight can be attached to them.

The difference between the Veit and the Marchand view histologically seems to be the different significance attached to these peculiar cells. In the paper on "deportation" the former stops short when he reaches the relation of that phenomenon to deciduoma malignum. In discussion with Prof. Veit I gathered that, even if he were forced to admit that these cells were not sarcoma cells of maternal origin, but were derivatives of the chorionic epithelium, he would still hold that some disease of the mother preceded the disease of the ovum—which may be the case without disproving that the elements which act as tumour are fœtal.

Part IV.—Cases.

The case which Dr. Kelly placed in my hands in 1897, already diagnosed as deciduoma malignum, and said to show characteristic decidua cells, supplements so well the new ones that it is worth a short recapitulation. We were so fortunate as at once to find in the sections of a secondary nodule in the lung masses of young tumour tissue growing in uncoagulated blood; these showed us that the tumour was not composed of decidua cells; and, comparing them with preparations of placenta, Dr. Kelly and I had no hesitation in identifying them with the chorionic epithelium

The features of the case were :—On February 2nd, 1897, Mrs. L—, aged 27, 2-para, now in her third pregnancy, consulted her medical attendant on account of slight hæmoptysis. On June 18th, 1897, abortion of a mole of about the size of a Jaffa orange, which was not examined microscopically. It was not hydatidiform. Vaginal hæmorrhage continued. August 7th, a tumour was detected in the vagina, which was removed on August 17th. It was described as "ulcerating hæmatoma," and was not examined microscopically. Bleeding persisted; further growths appeared in the vagina; the uterus was enlarged. September 24th, severe hæmorrhage and collapse. September 28th, hæmoptysis. October 3rd, recurrence of hæmorrhage; thereafter rapid increase in the size of the uterus. Death on October 19th, *four months* after the abortion. Numerous secondary nodules were found in the lungs, and infection of the pelvic lymphatic glands was also traced. Infection of lymphatic glands is a very rare feature in these cases; I am only aware of seven others that showed it; these were all very advanced cases. The infection of the adjacent vessels and of the lungs, which is an embolic infection through the veins, is the typical one. The tumour in this case was almost as large as the fœtal head at term; it had ulcerated nearly through the posterior wall of the uterus.

Case 1* (Dr. John Edgar's).—Mrs. P—, aged 32, married six years, no children, but two abortions. In March, 1900, the cervix uteri was dilated because of patient's desire for children. On September 20th, 1900, after two months' amenorrhœa and breast symptoms, uterine hæmorrhage, for which Dr. Burgess was consulted, occurred. Thereafter slight sanguineous discharge, which in December increased in quantity and contained clots. December 16th, a fleshy mass about the size of a hen's egg was extruded. Dr. Burgess states that it did not look like an ovum. He regarded it as a fleshy mole, and did not get it examined microscopically. He is certain it was not a vesicular mole. The bleeding continued. January 7th, 1901, intra-uterine application of carbolic acid. February 7th, Dr. Edgar removed with the curette several pieces of tissue like placental remains. Microscopical examination gave no definite result. The discharge ceased. In July it reappeared after a menstrual period, which was prolonged one week, and continued off and on.

September 5th, Dr. Edgar curetted a second time, and brought away pieces of tissue similar to the first pieces. The uterus enlarged rapidly after this operation. The pathologist's report was indefinite.† Another portion was removed on the 25th and submitted to me. It showed definitely chorionepithelioma. The uterus was removed *per vaginam* on October 5th, 12½ months after the first symptoms of abortion.

Just after the operation patient spat up a mass of tough, bloody mucus which did not show any evidence of tumour, but contained many catarrhal cells. Examination for tubercle bacilli was negative. The uterus contained a tumour about as large as a hen's egg rising

* To Dr. Edgar I am indebted for the specimen and much assistance in the working up of the subject.

† I have since heard from Dr. Galt that his report on this occasion (September 23rd) was a definite diagnosis of "deciduoma malignum." See a correction of my paper on "Chorionepithelioma, etc.," in the 'Journal of Obstetrics and Gynæcology of the British Empire' for September, 1903.

from the fundus. It was principally composed of blood-clot and necrosed tumour. The living tumour formed a thin, fairly well defined layer along the surface of the uterine muscle, with, in places, marked infiltration of that tissue, and occasionally small nodules deep in the muscle.

Nothing like secondary growths could be felt in the pelvis. Patient made a good recovery, and was well in July, 1902. In August she died with symptoms of cerebral disturbance of a very vague character. The relatives would not allow a *post-mortem* examination.

The termination of the case is very unsatisfactory; from analogies drawn from other cases one would suspect that the cerebral symptoms were due to secondary growths. From the point of view of treatment the result is in so far satisfactory that the patient made a perfect recovery, and enjoyed nine months of good health after the operation.

Case 2 * (Dr. Munro Kerr's).—Mrs. D—, aged 23, was admitted to the Western Infirmary on May 17th, 1902, suffering from pain in the abdomen and hæmorrhage from the uterus. There was a history of a miscarriage in the preceding September. In March she had been curetted. After that she suffered from pain in the abdomen, "constant" bleeding, and felt "ill and feverish." On admission she appeared very ill. She was very anæmic. On May 23rd the uterus was cleared out with the curette and fingers; several masses of what was called placental tissue were removed, and thrown away without being examined microscopically.

Next day the temperature rose to 106°, but fell within twenty-four hours and remained normal for a month; then it began to show an evening rise. Intra-uterine douching was followed by severe hæmorrhage. Deciduoma malignum was now diagnosed.

On July 31st Dr. Munro Kerr extirpated the uterus *per vaginam*. The preliminary examination provoked an

* I have to thank Prof. Muir for permission to use the specimen, and Dr. Kerr for many valuable suggestions.

extremely violent hæmorrhage; the uterus was extirpated as rapidly as possible. Patient was practically moribund from hæmorrhage, and died later in the day. *Post-mortem* examination was not allowed. The tumour is almost identical in size and appearance with that in the previous case. There were some hard cords in the vagina, which suggested secondary tumours, but they never came to proper examination. The total duration of the case was ten months. The point to be emphasised is the advisability of getting all curettings which look like placental tissue examined microscopically if there is anything in the history to suggest deciduoma malignum.

These three cases may be considered together. All were typical cases of chorionepithelioma, in which no villi were found, but there were tumours showing the characteristic derivatives of the chorionic epithelium. Decidua cells were found in Dr. Edgar's case, but not in the tumour area. For the most part the uterine mucous membrane showed an inflamed condition, with ulceration and necrosis where it was raised up over the growing margins of the tumours.

Interesting points in the first case were the occurrence of tumours in blood-vessels and in one Fallopian tube which were quite extinct, apparently killed by clotting in the hæmorrhage which they had themselves evoked. This tendency to die out seems to be particularly characteristic of the secondary growths, and has by various authors been suggested as a reason why cases have been known to do well after removal of the primary tumour, in spite of there having been signs of the occurrence of metastasis in the lungs. Another point was the distinctness with which destruction of large maternal veins by tumour was made out during the dissection, the nature of the destroying agent being subsequently confirmed by microscopical examination.

Case 3 (Dr. Pace's).—This case belongs to the category of the malignant vesicular moles.

Mrs. M—, aged 23, two children. At the end of July,

1900, patient, who was still nursing her last child, noticed red discharge from the vagina. Occasional irregular bleeding occurred, and on October 30th she passed a large hydatidiform mole. Hæmorrhage was very severe, and patient was sent to the Victoria Infirmary, where, on November 6th, the uterus was thoroughly cleared out by Dr. Elizabeth Pace. Pathologist's report :—" Typical vesicular mole; no sign of decidual tissue."

Patient was sent to the Convalescent Home on November 17th. On December 1st a bad flooding occurred; a little bloody discharge was passed every day after the 10th, with hæmorrhages on the 11th and 14th of an alarming character. On December 16th (forty-eighth day) the os was dilated, and a few fleshy masses—the largest as big as a hazel-nut—were removed with the fingers, and the interior of the uterus then very thoroughly curetted. Dr. Anderson diagnosed deciduoma malignum from the curettings. Patient was extremely weak and anæmic, but all went well.

On January 8th, 1901 (seventy-first day), she was prepared for examination and, if necessary, operation. The sound on being passed perforated the uterus without encountering any but the very slightest resistance. The uterus was immediately removed *per vaginam*. It was slightly enlarged, soft, and pale. What was expected was that it would be deeply ulcerated by tumour. Instead it presented the appearance of a uterus which had recently been very thoroughly curetted. Sections from the site of perforation showed no trace of tumour; but in sections from a part which somewhat resembled a placental site were found a few syncytial masses embedded in the remains of mucous membrane, and even penetrating into the muscle. The sections from which the diagnosis was made showed villi with great hyperplasia of the epithelium (much greater than was seen in sections made from many parts of the mole), and numerous syncytial "wander-cells" in some shreds of uterine muscle. Patient made a slow recovery, and was

in good health in December, 1901. I think this is a very doubtful case, but a very important one to place on record. I have to express my appreciation of Dr. Pace's kindness in allowing me to do so.

From the literature one learns that the cases in which villi have been found have given rather favourable results on operation. So much is this the case that one is inclined to suspect that the overgrowth of epithelium in certain of them, if not physiological, was at any rate not malignant.* The opinion was expressed to me several times in Germany that it behoved one to be very chary of doing a radical operation in a case in which the curetting revealed complete villi, no matter how rich their epithelial covering; at any rate, not to be guided by the microscopic examination alone. In Dr. Pace's case, I believe, taking all the circumstances together, that the hysterectomy was the right thing to do.

Part V.—Histological Details.

Many of the difficulties that have arisen in the interpretation of these tumours are due to defective histological technique in the examination of the earlier cases, or to defects in the material, for which the peculiarities of the growth itself are responsible. A characteristic feature of the growth is the tendency of the cells to undergo great modifications, some of which are degenerative, leading on to necrosis, while others seem to be an expression of intense activity.

It is necessary for the proper appreciation of the tumour to have material which shows the growing zone of the tumour and the stages of the cell metaplasia and cell division. In such a part it will be seen that there are three principal cell forms:

1. Called the syncytium, composed of large masses of protoplasm of various shapes—rounded, long-drawn-out

* *E. g.* case of L. Pick, "chorionepithelioma benignum."

bands and whorls, or quite irregular masses, often riddled with vacuoles which may contain fluid blood, and which often spin it out into meshworks of very fine threads (fig. 3). These syncytia, or plasmodia, as they are sometimes called, contain numerous nuclei. The nuclei are frequently small, oval, dense, and stained uniformly and deeply with the ordinary chromatin stains; but just as often they present all modifications up to very large, clear, vesicular nuclei, with well-marked intra-nuclear network and comparatively pale chromatin staining. Karyokinetic figures are not found. The protoplasm typically shows an opaque appearance, and stains deeply with eosine and other plasma stains.

2. Individual cells, which form masses growing in intimate union with the foregoing (fig. 4). These cells in the youngest stage are small polyhedral cells, well defined, epithelial in character, closely pressed together, and showing no connective-tissue stroma between them. The nuclei are round or oval, clear, vesicular, with well-marked intra-nuclear network, and staining moderately deeply. Karyokinetic figures are numerous (fig. 5). The protoplasm is scanty, clear, finely granular, and stains very little with the plasma stains. Frequently the masses of these cells lie inside the large syncytia, or they show a border of syncytium which may be so thin as to resemble endothelium very closely (figs. 1 and 3). Strands of syncytium also stretch in among the individual cells in a highly irregular fashion.

When villi are present the former cells are seen to be developed out of the syncytium, and the latter out of the Langhans layer (figs. 5 and 6). This statement must be qualified by the remark that in good material all sorts of intermediate forms are met, so that one may certainly conclude that here, as in the earlier stages of development, the individual cells are the primitive form and the syncytium a modification of them. Probably also, just as one has more difficulty in seeing anything that indicates a common origin of the two layers in the placenta of the later months, and rather the appearance of there being two

DESCRIPTION OF PLATE VII.

Illustrating Dr. John H. Teacher's specimens of Chorionepithelioma.

Fig. 1.—Typical masses of chorionepithelioma invading the uterine muscle. From the case of Dr. Edgar. The tumour-tissue is distinguished by its darker shade and larger nuclei. The darkest masses are the multinucleated syncytium. The remains of uterine muscle among the tumour-processes produce a sort of alveolar structure. The small dark masses amid it are detached masses of syncytium; some of them simulate hypertrophied muscular fibres. (From a drawing by Jacob Wenzl, Vienna. × 85.)

Fig. 2.—A uterine blood-vessel invaded by tumour. The attacking cells have appeared under the endothelium at two points, and large wandering cells of intermediate character have also crept round to the other (upper in figure) side of the vessel. The uterine tissues show reactive round-celled infiltration. In the vessel is a clump of loose tumour cells. From Dr. Edgar's case. (From a drawing by Wenzl. × 85.)

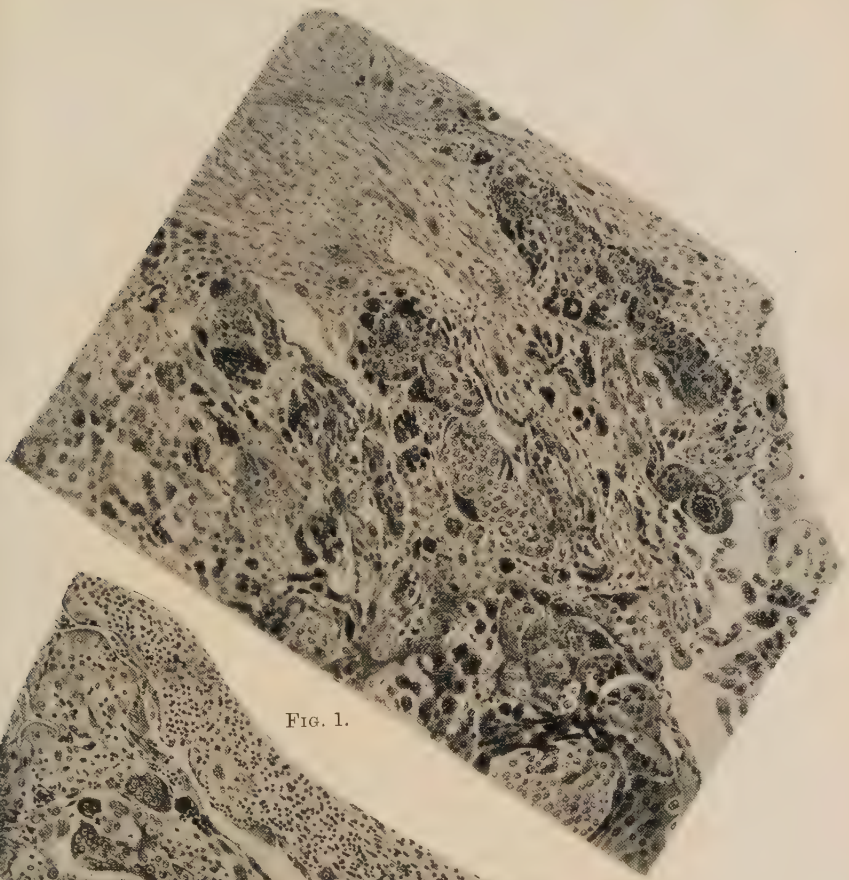

Fig. 1.

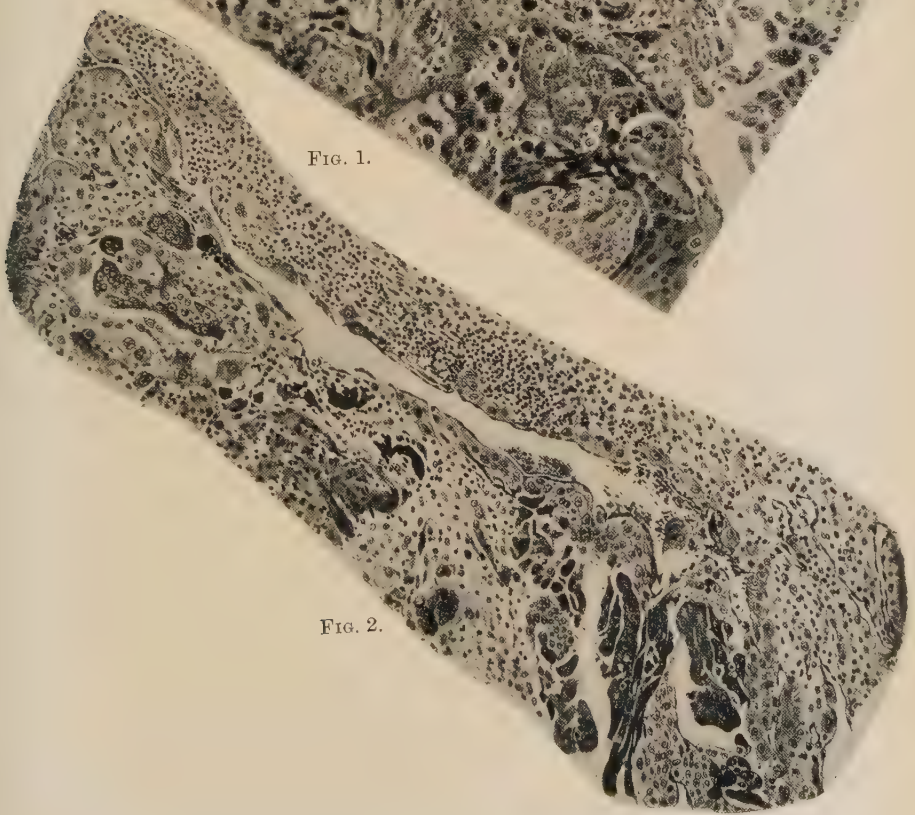

Fig. 2.

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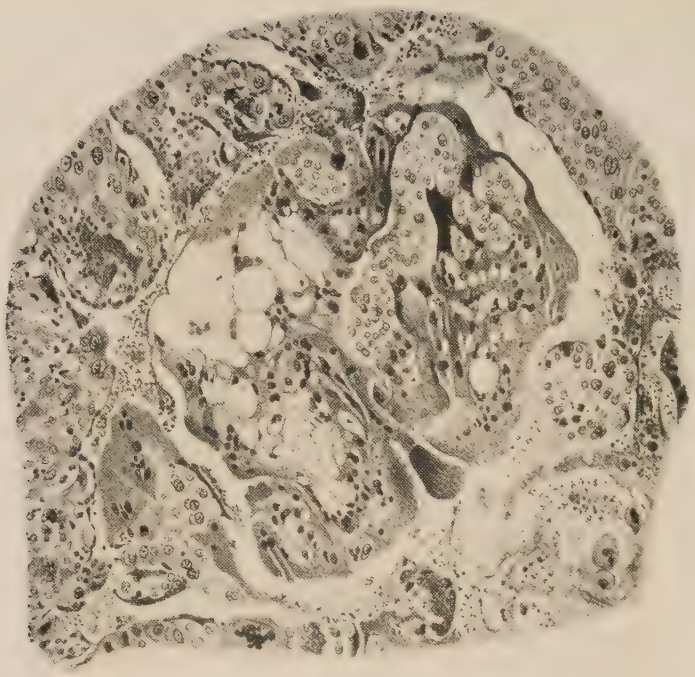

Fig. 3.

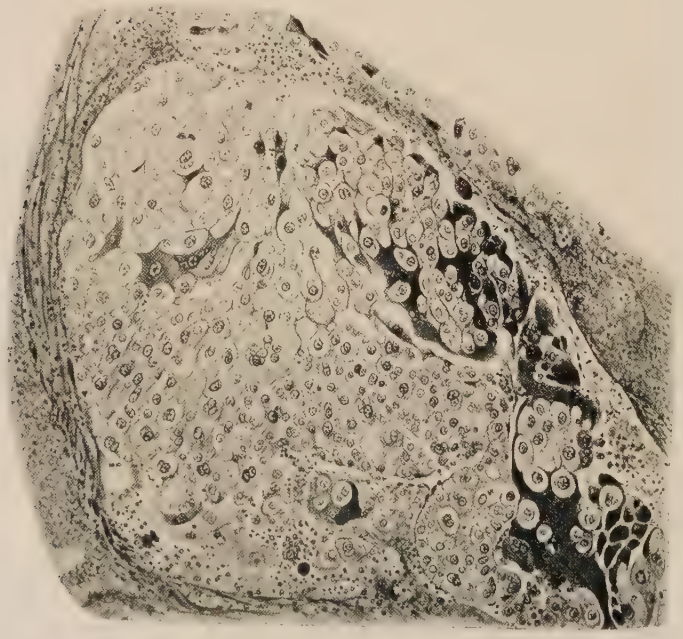

Fig. 4.

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DESCRIPTION OF PLATE VIII.

Illustrating Dr. John H. Teacher's specimens of Chorionepithelioma.

Fig. 3.—Vacuolated syncytium with masses of Langhans-layer cells embedded in it. To the left is uterine tissue infiltrated with epithelial wandering cells. Large numbers of leucocytes are seen, of small size compared with the tumour cells. From Dr. Munro Kerr's case. (From a drawing by Wenzl. × 130.)

Fig. 4.—Cell-mass from Dr. Kerr's case, showing the large decidua-like elements, and the forms intermediate between the Langhans layer and the syncytium. The mass is surrounded by blood and thrombus. Many of the individual cells contain several nuclei. (From a drawing by Wenzl. × 130.)

DESCRIPTION OF PLATE IX.

Illustrating Dr. John H. Teacher's specimens of Chorionepithelioma.

Fig. 5.—A small portion of a chorionic villus from Dr. Haultain's case, showing the origin of the tumour from the epithelium; the continuity of the various cell-formations with one or other layer is obvious. Karyokinetic figures are numerous in the Langhans-layer cell-masses. Compare Fig. 6, which shows the same villus and a large mass of tumour less highly magnified. (From a drawing by Wenzl. × 220.)

Fig. 6.—Photograph of the same section as Fig. 5. The mesoblastic core of the villus is to the right. It was in a state of hydatidiform degeneration. (Zeiss aa., 24 mm., no oc. × 30.)

Fig. 7.—Transverse section of a process of tumour extending along the wall of a blood-vessel. The lumen of the vessel is filled by tumour, and not much of the wall remains. From Dr. Edgar's case. (From a drawing by Wenzl. × 170.)

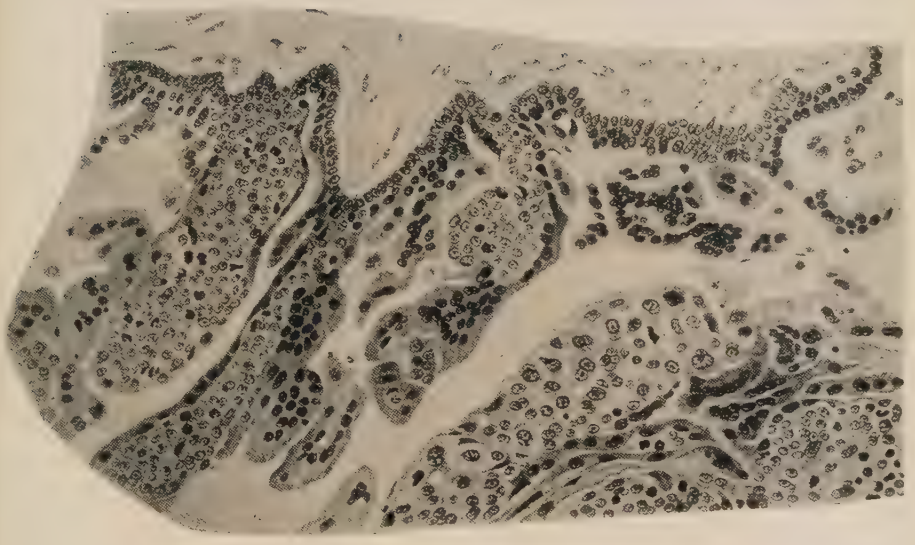

Fig. 5.

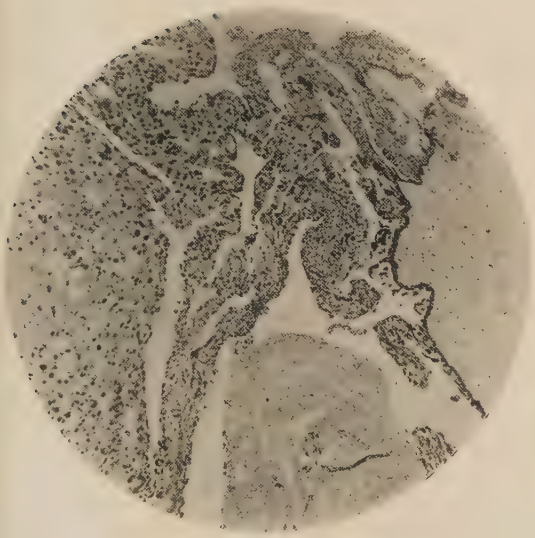

Fig. 6.

Fig. 7.

Adlard & Son, Imp.

distinct, well-differentiated structures, so one would infer here that the syncytium has a power of very extensive growth and multiplication of its nuclei (by direct division) independent of the growth of the Langhans-layer cells. This must be the case in the unusual form of tumour where there is hardly anything but syncytium. These intermediate forms and various infiltrating cells may be classed together as the third cell-type.

The tumour cells usually form masses of some size attached to the uterine tissues. In one of my cases (Edgar's) there is in a considerable area a regular layer of it lining the uterine cavity, and not extending far inwards from its attachment to the uterine muscle. This is the real active tumour, or, one might say, ulcer. All inside that, forming the real bulk of the growth, is more or less degenerated or necrotic tumour mixed with blood-clot, the latter predominating. The large amount of blood-clot in the tumour is quite a characteristic feature. The appearances suggest that the destruction wrought by the growing and infiltrating tumour resulted in hæmorrhages, which tore up the growing zone, broke through it, and passed out as a visible hæmorrhage; or, if small in amount, clotted *in situ*, and the detached cell masses embedded in the clot degenerated and died. A point of practical importance is that in a curetting for diagnostic purposes it is just those degenerated parts that are most likely to be found, if, indeed, anything beyond clot and dead tissue is obtained.

In the cell masses there is neither connective-tissue stroma nor blood-vessels. In the zone of invasion it is plain that instead of modification of the maternal tissues to form a supporting stroma, like in a carcinoma, there is destruction. In a van Gieson preparation, traces of fibrous tissue and disintegrating muscle-cells are readily recognisable.

A very characteristic appearance is that of large cells under the endothelium, which look as if they might have grown there (as Veit holds); but they can be identified as the forerunners of tumour masses which bulge the endo-

thelium into the cavities of the vessels, and finally, after destroying it, project free into them (fig. 2).

The infiltrating cells often resemble decidua cells strongly. Also, in the cell masses away from the zone of infiltration, the Langhans cells swell up, both cell body and nucleus growing larger, either without marked change in the protoplasm, or with change in the direction of the opaque character of the syncytial protoplasm. The nuclei may become multiple (fig. 4). Degenerative changes may complicate the picture. It is very difficult to draw the line between changes due to active growth and changes due to degeneration. The result often is to produce masses of cells which simulate decidua fairly strongly. Where you have nests of such tissue embedded in maternal tissue (out-runners of the growth [fig. 7], or actual metastases in the muscle), or still more where you have the so-called "atypical" infiltrating mode of growth, the appearance is such that it is not surprising that the earlier observers should have thought they had to deal with a tumour composed of decidua cells.

Large, detached, syncytial masses in the interstices of the tissues, and potential emboli of syncytium lying free in the blood-vessels (veins), are very common. All of these varied forms of growths I can find in any of the three cases of which my material is good. The extraordinary variety of cell forms is one of the difficulties in the description of these tumours.

It has been argued that the mere cell forms do not constitute a valid reason for creating a new class of tumour; but nobody wishes to do so on that ground alone. At the same time I think the histological differences between chorionepithelioma and other tumours are very considerable. Giant-cells in tumours, both sarcomatous and carcinomatous, have been known much longer than chorionepithelioma; but the tumours of these two classes whose cellular resemblance to the last will bear scrutiny are very rare indeed. Veit showed me a carcinoma of the uterus composed of masses of individual

cells and syncytium absolutely identical with the cell masses of chorionepithelioma, and Prof. Muir has observed a similar tumour; but the masses lie in the meshes of a typical fibrous alveolar stroma; the other characters of the chorionepithelioma are wanting. The only exact imitation is that found in the teratomata.

I have also seen syncytial alteration of uterine surface epithelium in the human subject; not a case of tumour. The rabbit, in its placentation, shows individual cells modified into syncytium both in the uterine epithelium and in the trophoblast. The two forms of syncytium are clearly distinguishable. The former gets destroyed by the latter, and does not enter into the formation of the placenta at all. Other examples of syncytial modification of epithelium could be mentioned.

Part VI.—On Certain Exceptional Cases of Chorionepithelioma, and the "Chorionepithelioma" of Teratomata.

Cases of primary chorionepithelioma not located within the uterine cavity have been mentioned. I have collected sixteen such (this of course does not include tubal ones). This must appear a fairly large allowance of "exceptions" in the literature of about 190 cases all told; and when one remembers that these sixteen have all occurred since 1896, the proportion to "typical" cases looks larger still. But it is explained by the fact that there are now a good number of cases of the uterine form of the disease lying unpublished, while the rare ones are recorded. By the kindness of Prof. Weichselbaum, I obtained portions of six specimens which have been added to the Museum of the Allgemeine Krankenhaus in Vienna, between February, 1901, and August, 1902. Of these, only two were being published; the rest were examined and placed in the museum; several others in the same period were simply examined and thrown out; probably none of them will find their way into literature. A like state of affairs, though

perhaps not concerning so many cases, I encountered in Prague and Dresden; in Leipsic and Kiel I heard of several cases which are being worked up for publication.

In some parts of the world, it would appear from the above, chorionepithelioma is by no means a rare tumour. I am aware of four in Glasgow, and six in Edinburgh, since 1897. On the other hand, although the pathologists of Buda-Pesth have been keenly on the look-out for cases for several years, none has been found in that city (Krompecher). It may be that it is almost equally rare in London; or the cases are called sarcoma, or owing to the comparative rarity of *post-mortem* examinations they pass as retained placenta with sepsis.

The occurrence of chorionepitheliomata primarily in the vaginal veins (the commonest form), or elsewhere out of the uterus, is explained by the facts of deportation already mentioned. To account for the uterus remaining sound, two theories have been advanced; viz. (1) that the tumour arose from villi or epithelium budded off from a normal placenta, which after a period of latency took on malignant growth; or (2) that they came from a placenta already *in situ* showing malignant tendencies, but which somehow got extruded from the uterus, which then healed while the displaced portions grew. At present the material for a definite judgment is wanting; I regard the former as the more probable explanation.

There are a number of cases in which the connection with a preceding pregnancy is not obvious, but, with one exception, they present no difficulty. This is the case of Lubarsch (quoted by Schlagenhaufer) of chorionepithelioma in the uterus of a virgin of thirteen, who had also not menstruated. The proof of virginity is always a delicate matter. The tumour was diagnosed before the pathologist knew where it came from, and there can be no doubt of the correctness of the diagnosis histologically.

Along with this may be mentioned a case recorded in Brussels by Bock, of the passage of a typical hydatidiform mole by a virgin of 12½ years. This was passed at the

fourth menstruation. The three preceding menstruations had been painful, the third particularly so, and in it membrane was passed. The fourth resembled a miscarriage. The material passed was a hydatidiform mole of somewhat small size but typical appearance to the naked eye. There was no proper microscopic examination, and the specimen is no longer in existence; but I have Dr. Bock's assurance that there was absolutely no doubt as to its nature. As to the virginity of the patient also, he had absolutely no doubt. Bock suggested that his specimen was a "fœtal inclusion." A similar explanation has also been advanced of an ovarian chorionepithelioma which was demonstrated at Carlsbad by Kleinhans of Prague, the full report of which is not yet published.

Before taking up Schlagenhaufer's cases the sense in which the term "teratoma" is used must be explained, as it bears a different significance in English and in German scientific writings. Bland-Sutton reserves it for such tumours as clearly arise from the remains of an included twin, and calls the mixed tumours of the ovary, testis, etc, "dermoids." German authors, on the other hand, apply it to all tumours—mischgeschwülste, or mixed tumours—in which derivatives of all three layers of the blastoderm appear to play an essential part. The term "embryoma" is also coming into use for these growths. In many of them the growth is for the most part made up of derivatives of the epiblast; many of them Bland-Sutton would call dermoids, and would derive their tissues from the normal structures or from embryonic relics or inclusions which had not the morphological value of an ovum. The German teratoma or embryoma, on the other hand, is held to be derived from some source which has the value of an included matured and fertilised ovum.

Marchand, in an exhaustive article on the subject, concludes that no sharp lines of distinction can be drawn between included twins, tumours which clearly are equivalent to an included fœtus, the mixed tumours not included twins—which he would regard as developed from

some morphological equivalent of an ovum—and dermoids in the sense of Bland-Sutton.

The teratomata, which show chorionepitheliomatous or hydatidiform-mole-like structures are, according to Schlagenhaufer, developed out of some morphological equivalent of an ovum which, from its surroundings, is unable to develop into a proper organism, but develops into a growth in which embryonic tissues representing all the elements of the embryo and its membranes appear. On this theory the chorionepitheliomatous and mole-like tissues are the representatives of an actual monstrous placenta. When such tissues as epidermis, hairs, teeth, unstriated muscle, bone in large masses, gland tissue, lung, nervous tissue, intestinal tissues, can occur in these tumours, it is hardly surprising that placental tissues should occasionally be found, and, being there, that they should take on malignant action.

Schlagenhaufer's first case.—A man of 43 years, from whom no account of his illness was obtained, died on July 24th, 1900. The diagnosis was left-sided pleurisy and pneumonia, possibly infarction of the lungs. The *post-mortem* diagnosis was sarcoma of the left testicle, with metastases in the left lung, thyroid gland, and right kidney; perirenal hæmatoma from hæmorrhage in the renal metastasis and perforation of the capsule of the kidney.

The tumour, which was received after hardening in 5 per cent. formalin, was of roughly oval shape, measuring 11 by 8 cm. It was enclosed in a firm white connective-tissue capsule from which tense bands passed in, dividing it into several lobules. Testis and epididymis were not recognisable to the naked eye. In section the tumour consisted of a brown-red crumbly tissue. Only in one more fibrous part were some cysts to be seen, which were empty or contained a shining white material.

It resembled, in fact, an ordinary uterine chorionepithelioma after hardening. The pulmonary metastases were

indistinguishable from secondary nodules of chorionepithelioma in the lungs.

Schlagenhaufer's very clear description of the histological characters may be summed up, so far as most of the primary tumour and the whole of the secondaries are concerned, as *identical with those of chorionepithelioma to the last detail.* The relations of the two elements to the blood-vessels were particularly clearly made out. The chorionepitheliomatous tissue and blood-clot made up most of the primary tumour, but the cells were well preserved in only a small part of it. This may be contrasted with Schmorl's case, where the chorionepithelioma was found in only a very small area of the primary tumour, although the secondary growths were very extensive; and with Wlassov's first, in which out of ten large pieces he found it in only one. In addition, the primary tumour contained at one part round the edge, long-drawn-out flattened tubules lined with columnar epithelium one or two cells deep, evidently remains of the rete testis. Near these, but more in the middle of the tumour, were found cavities filled with horny stratified epithelium and epithelial pearls. Dermal appendages were wanting. Larger cysts with cylindrical epithelium were also seen, and in one place tissues resembling embryonic lung, lymphatic follicle, young connective tissue, and involuntary muscular fibre. The secondary tumours showed the characteristic chorionepithelioma elements and blood-clot, but contained no vessels, no connective tissue, no glandular elements.

Clearly, he says, we have to do with a teratoma of the testis; all three layers of the blastoderm and the trophoblast are represented. The enclosing albuginea and the testicular remains prove that it was a tumour of the testis itself. The malignancy was confined to the representatives of the trophoblast, or chorionic epithelium, they alone being found in the secondary tumours, and they alone showing the destructive action on the blood-vessels and other adjacent tissues characteristic of ordinary chorionepithelioma.

Schmorl's and Wlassov's tumours show very similar structure; and they declare equally decidedly for their teratomatous nature. Schmorl agrees with Schlagenhaufer as to the origin of this tissue. All agree in not tracing it to endothelium; instead they see the usual destruction of the endothelium and invasion of the blood-vessels by the tumour cells.

Wlassov, however, takes a different view of the origin of the chorionepitheliomatous tissue, which he believes he has traced to the epithelium of the glandular tubules in the tumour in two of his cases. Following the strict theory of the teratoma, he would have regarded it as derived from an actual monstrous trophoblast. In his tumours there were no epiblastic structures, but only hypoblastic and mesoblastic were present. On this account he considered the trophoblastic origin an unproved hypothesis. (This was writing without knowledge of Schlagenhaufer's work.) He sums up the tumour as an epithelioma *sui generis* of the testis developed out of the incompletely differentiated epithelium of embryonic gland tubules—*not tubuli testis;* these he sees undergoing destruction.

The mesoblastic tissues are not the stroma of a carcinoma, but the product of the mesoblastic part of an embryonic *anlage.* They do not reappear in the secondaries, which are composed only of the epithelial elements.

In Schlagenhaufer's second case not merely were there cells corresponding to the epithelium of chorionic villi, but there were also mesoblastic tissues—in fact, if the theory of origin be admitted, whole villi mostly in a state of hydatidiform degeneration. The case, therefore, would be not inappropriately described as one of malignant hydatidiform mole in the male. He has collected five cases in which structures resembling hydatidiform mole in their naked-eye characters have been found in the blood-vessels in connection with tumour of the testis. These were described as peculiar myxomata by Waldeyer and by Breus, as carcinoma by Kanthack and Pigg, as adeno-carcinoma myxomatodes by Silberstein, and as

lymphendothelioma by MacCallum. Breus's case is the one which Schlagenhaufer has brought to re-examination. It had lain twenty years in 60 per cent. spirit, and the microscopic preparations are therefore not good, but they are fairly distinct.

History from Breus's original report.—W. H—, aged 40, had noticed for six weeks a distinct and painful swelling of the scrotum, and complained of great difficulty of breathing, and pains in the whole right side of the body. Examination showed a hard tumour of the right testicle; locally diminution of the pulmonary resonance and râles; cardiac area normal; weak apex-beat. At the apex a loud double murmur. Tenderness of the lower part of the abdomen. The tumour increased in size very rapidly, and he died four weeks later.

The lungs were studded with secondary growths, some exactly like the secondaries in a case of chorionepithelioma, others more like infarctions; and the latter showed emboli in the vessels supplying the areas, which consisted of portions of the villous growth. In the left auricle, hanging from the region of the fossa ovalis, a "gelatinous, bunch-of-grapes-like new growth, which might best be compared to the vegetations of a hydatidiform mole." (Waldeyer also compared the growth in his case to hydatidiform mole.) The testis and epididymis were easily shelled out of the scrotum; they formed a tumour about the size of a fist, and consisted of a firm fibrous meshwork enclosing cysts. From the upper end of this stretched the thickened spermatic cord, the dilated veins of which were filled with long string-like growths that extended right up into the right auricle and through the foramen ovale into the above-described mass. Nowhere was the growth adherent to the walls of the blood-vessels. MacCallum's case is extremely like Breus's; and he also described the intra-vascular growths as follows:—"These curious growths resemble nothing so much as the villi of the hydatidiform mole." MacCallum regarded his case as of endothelial origin. On the other hand, Schlagenhaufer

not only could not trace the origin of his to endothelium, but he saw destruction of the blood-vessels just as in malignant hydatidiform mole. The villous masses showed the structure of hydatidiform chorionic villi, including the characteristic two-layered epithelium; but this was made out after considerable difficulty owing to the bad fixation of most parts. Further, the manner in which the villi were pressed together in places resulted in an appearance like tubules lined with a peculiar epithelium embedded in a fibrous stroma—appearances which suggest a resemblance to that described by Wlassov. There were also real glandular tubules in these masses and other tissues, which indicated their teratomatous nature.

The occurrence of the whole of the chorionic villi is explained by the "embryonal anlage" having early gained access to the interior of veins, where it found space and suitable conditions for luxuriant growth.

Probably we are just at the beginning of a controversy as to the origin of these curious structures, and their relationship to chorionepithelioma and hydatidiform mole. The theory of Wlassov is no less open to objection than that of Schlagenhaufer. In Schmorl's tumour there is something very like a gland tubule, from which the chorionepitheliomatous tissue is springing; but the epithelium of this structure is remarkably like chorionic epithelium, and it is, moreover, quite different from that lining neighbouring tubules and cysts which show no suggestion of change into chorionepitheliomatous tissue. Wlassov's photographs do not demonstrate to my satisfaction what they are supposed to do.

At Carlsbad, Bostroem mentioned a case in a male subject of tumours, not connected with a genital gland, which presented structure similar to Schlagenhaufer's first. It is not yet published in detail. It appears to show that these tissues may not be limited to teratomata of the testis, but may appear in teratomata anywhere.*

* L. Pick has recently published an account of a dermoid of the ovary

Conclusions.

I think it is proved that—(1) the so-called deciduoma malignum is a tumour arising in connection with a pregnancy and originating from the epithelium of the chorionic villi (or its forerunner the trophoblast), which is of fœtal ectoblastic origin. The malignant hydatidiform moles may be treated as a variety of chorionepithelioma. (2) That the chorionepithelioma and malignant hydatidiform mole form a quite characteristic group of tumours clinically and pathologically, and that they should be classified neither as sarcomata nor carcinomata, but as a distinct class *sui generis*. The most appropriate name is chorionepithelioma (or chorio-epithelioma) malignum. (3) That in addition to the common tumours developing from a pregnancy, there are tumours containing precisely similar structures which are not connected with a pregnancy, and may occur in other parts of the body than the uterus, and in either sex. The most probable explanation of them is that they are teratomata originating from some structure which has the morphological value of an included matured and fertilised ovum; and the chorion-epitheliomatous tissues represent the actual trophoblast (chorionic epithelium) of the included ovum.

Addendum.

In studying the literature of chorionepithelioma, 188 cases were epitomised. Analysis of these gives some results which are of interest, and appear also to be of practical importance.

Ninety-nine patients were treated by operation which can be described as radical. In eighty-seven cases there was either no operation or it was not radical. Out of these last, eighty-three died; the fate of two is not known

in which there was a cyst containing innocent hydatidiform mole ('Berl. klin. Woch.,' 1902, No. 51).

to me; in two cases spontaneous healing occurred—second case of Langhans and that of von Fleischmann.

The results are shown in the following tables:

TABLE I.—*All cases.*

Preceding pregnancy.	Number.	Deaths.	Recoveries.	Percentage of recoveries.
Hydatidiform mole .	73	39	34	46·6
Abortion . . .	59*	38†	20	33·9
Confinement at term .	49	39	10	20·4
Tubal or ovarian . .	7	5†	1	—
All cases . . .	188	121	65	34·2

TABLE II.—*Cases in which radical operation was performed.*

Preceding pregnancy.	Number.	Deaths.	Recoveries.	Percentage of recoveries.
Hydatidiform mole .	42	9	33	78·5
Abortion . . .	36	16	20	55·5
Confinement . . .	19	10	9	47·3
Tubal	2	1	1	50·0
Total	99	36	63	63·6

Out of the 36 deaths, 11 occurred within a few days; 25 after a considerable interval. All of these 25 that were examined *post mortem* showed recurrence in internal organs. In 16 of the cases there was no marked improve-

* Two cases in which preceding condition was not known placed here.

† Result in cases of Metoz and Nikiforoff not known to me.

ment after the operation; in 9 there was good recovery, and in 5 of these an interval of several months' good health before recurrence. In 5 only did the disease recur after more than six months' interval; the longest was in the case of Löhlein—one year. Of the 63 recoveries, 32 were reported well six months or more after the operation. Of these, 24 were reported after one year or more, and out of them 13 were over two years. Eight patients recovered who had presented signs of metastasis of the lungs having occurred. In 2 of these there were also secondary growths in the vagina, and there were growths in the vagina in 2 other cases, and in the ovary in another. In 3 cases part of the growth was left behind, yet healing occurred.

While the impression conveyed by the figures is probably too favourable, it seems reasonable to conclude that operation offers a fair chance of recovery, and, further, that it may be done with some prospect of success in the face of the gravest signs of disease, and even of metastasis, having occurred.

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Dr. Peter Horrocks considered the paper a valuable piece of work, and an important contribution to the solution of a vexed question. It was necessary, however, to correct the statement that this Society had some years ago come to a conclusion on the matter. As a fact, the Society never did come to conclusions. The opinions of individual Fellows did not commit the Society as a whole; and at the discussion referred to by the author, so far from the views expressed by the late Dr. Kanthack and Dr. Eden and others being accepted, the records of the Society would show that such was not the case. Speci-

mens had been shown, and discussions had been held upon them indicating a variety of opinion. As recently as January, 1902, Dr. Lockyer had shown a specimen, and had stated his opinion that there were two kinds of malignant growth associated with pregnancy—one a mesoblastic sarcoma of decidual, and therefore of maternal origin, and the other a syncytial carcinoma or chorio-epithelioma, and therefore of fœtal origin. Dr. Lockyer stated that the malignant sequela of the vesicular mole was invariably a syncytioma. Now, to-night, he (the speaker) exhibited a specimen which seemed to prove that this statement was incorrect. The patient came under his care at Guy's Hospital. The woman was moribund, and only lived a week or two afterwards. She began bleeding during a pregnancy in the early part of 1902, and then was delivered of a vesicular mole. The bleeding stopped, and she menstruated normally three times before bleeding set in, which it did last November, 1902. When she came into the hospital she had extensive cancer in the uterus, which reached as high as the navel; in the vagina, from which nodules protruded so as to be visible; and in the lungs, giving rise to hæmoptysis. At the *post-mortem* examination the usual condition of things was found. But the chief interest in this specimen lay in the fact that in spite of this being a genuine case of a sequela of hydatidiform degeneration of the chorion, yet no syncytium could be found in the growth nor in any of the secondary growths.* Both had been carefully examined by his colleagues, Mr. Targett and Dr. Hicks, the Obstetric Registrar at Guy's. The specimen was shown, and also microscopical sections, and the characteristics were more those of sarcoma than of carcinoma. One point was to be well noted—namely, that the woman menstruated normally three times after passing the mole, whereas in most cases the patient never really got well after delivery, but kept on losing more or less as the disease progressed. Still it was a sequela, but whether *post* or *propter* he could not say; only it must no longer be alleged that this form of growth following hydatid mole was invariably a syncytioma. Again, in 1901 he had shown a specimen of so-called "deciduoma malignum" at that Society, removed from a woman who was sent into Guy's with a history of a miscarriage with subsequent hæmorrhage, and she was operated on with the idea of removing retained products of gestation. At the operation it was discovered that there was a growth in the body of the uterus, and so vaginal hysterectomy was done, and the patient recovered. But this specimen was submitted to the Pathological Committee of the Society, and whilst fully agreeing that it was a typical syncytioma they expressed their doubt as to there being any evidence of a recent

* See remarks by Dr. Lockyer, p. 312.—Ed.

pregnancy. She was forty-seven years of age, and the history of miscarriage was by no means conclusive. She had a flooding, and thought it must be an early miscarriage; but it was doubtful whether she had missed a period, and there was nothing in the nature of an ovum ever seen. Hence, if it were assumed that this woman had not been pregnant recently, here you get a typical chorio-epithelioma or a syncytioma with no fœtal or ovular origin.

He did not feel that we were in a position yet to state that all these cases were of maternal or of fœtal (ovular) origin. Indeed, he felt inclined to believe with Dr. Lockyer and others that there were two kinds of malignant growth associated with pregnancy—one of decidual (maternal) origin of a sarcomatous type, for which the term "deciduoma malignum" was appropriate, and the other a chorio-epithelioma of fœtal (ovular) origin of a carcinomatous type. But he would like to ask two questions:—(1) Were all malignant tumours of the uterus following and associated with a pregnancy, that contained syncytium, *ipso facto* of fœtal (ovular) origin,—that is, did the presence of a syncytium prove ovular origin? (2) Was it possible for a malignant growth associated with pregnancy to be of fœtal (ovular) origin, and yet to be of the sarcomatous type without syncytium, or were all such growths of decidual or maternal origin?

Dr. Haultain thanked Dr. Teacher for his admirable communication, which from its completeness would stand as a classic on the subject in the English language. Although, as Dr. Horrocks had said, the Obstetrical Society did not commit itself as a whole to the opinions expressed in the discussion of 1896, the individual members, without exception, committed themselves to the sarcoma theory; and naturally this was accepted by the Continental observers as the expression of British opinion, no other discussion on the subject having been published.

In 1898 a case of so-called deciduoma malignum had come under his care. This was cured by vaginal hysterectomy, and the woman is still well. In consulting the literature at that time he was much struck by Dr. Teacher's paper describing Dr. Kelly's case; and on investigating the subject for himself he had at that time absolutely adopted the view promulgated by Marchand, viz. the new growth in question was epithelial, or ovular in origin. Since then he had become more and more convinced of the correctness of that view, and absolutely concurred in what Dr. Teacher had stated. When he presented his paper before the British Gynæcological Society in 1899, the general trend of expert opinion was just commencing to turn towards the adoption of the ovular origin, which was now very generally accepted. Everything pointed in this direction—the similarity of the cells of the growth to those of the chorionic coverings, and the frequency of the

occurrence of the new growth after hydatid mole, which in itself was due to marked proliferation of Langhans's cell and the syncytium. It seemed to him there was no weak link in the chain of evidence. From the completeness of Dr. Teacher's demonstration it was unnecessary, after stating complete concurrence, to enter further into the pathology, but clinically there were one or two points of importance he should like to mention. As regards the indications for radical treatment by hysterectomy, the simple demonstration of syncytial masses in uterine scrapings was not sufficient, particularly after the expulsion of a mole, as portions might be retained without assuming malignant action, and could be cured by curettage, as he had twice seen. When, however, violent hæmorrhage was associated with the curettage, the prognosis was much more unfavourable, and the cavity of the uterus should be at once explored by the finger for the detection of a growth. He was much interested in the cases of spontaneous cure after metastases. This might be accounted for by the tendency of the growth to kill itself by the free extravasation of blood choking cell-growth, the particular *rôle* of this cell being to penetrate blood-vessels and flourish in the circulating blood-stream.

Dr. W. E. Fothergill (Manchester) said that several questions had occurred to him during the reading of Dr. Teacher's most admirable and interesting paper. The author had defined the so-called *chorio-epithelioma* as a tumour of the uterus occurring in connection with pregnancy. Would it be possible to retain this definition and at the same time to continue to include under the name "*chorio-epithelioma*," (1) growths occurring in the female but leaving the uterus perfectly healthy, and (2) growths occurring in the male subject? The neoplasms in question had now been described as occurring in (*a*) the male subject, (*b*) the young female apart from pregnancy, (*c*) females suspected of recent pregnancy, (*d*) females known to have been pregnant recently, (*e*) elderly females not suspected of recent pregnancy. In the case of, for instance, a female with a problematic pregnancy followed by a "syncytial" tumour in the vagina, how would it be possible to say whether the growth was due to pregnancy or not? Was it proved, as Dr. Teacher had asserted, that the trophoblast was a distinct histological entity? Could its presence be detected infallibly by inspection, and could a new growth derived from trophoblast be recognised as such? The speaker understood Dr. Teacher to have remarked that cases in which actual chorionic villi were observed had a more favourable prognosis than those in which no villi could be found. Did not this clinical observation suggest that the cases investigated formed two categories? Might not the more serious be instances of new growth not causally connected with pregnancy, the less severe being examples of more or less pro-

nounced invasion of the maternal organism by chorionic villi? Dr. Teacher held that none of the cases reported gave any support to Veit's view that villi might be included within masses of new growth of maternal origin. Would it not, however, be easy to write descriptions of any, or, indeed, of all the published cases, in such a manner as to support Veit's theorem? Dr. Teacher further considered Veit's view to be finally negatived by the demonstration of certain changes in the walls of blood-vessels whose lumina contained chorionic elements. But could not similar changes in the walls of vascular structures be demonstrated in certain angio-sarcomata quite apart from the presence of chorionic structures? The above questions were some of those which had occurred to the speaker, but he had risen mainly in order to point out that the authors of certain papers referred to by Dr. Teacher appeared to have ignored the work of the late Dr. Kanthack and of Dr. Eden; for these gentlemen had long since pointed out the similarity between the so-called choriomata and other neoplasms, more especially certain growths of the testis. In the year 1896 they argued as follows:—The testicular and other neoplasms in question are sarcomata; therefore, until conclusive evidence to the contrary is produced, we prefer to regard the similar growths of the uterus as being sarcomata also. At the present time our attention was again being called to the similarity between the various neoplasms in question, but in the opposite sense. The uterine growths we were now supposed to have accepted as choriomata; therefore the similar growths of the testis and other organs we were told must also be choriomata. Eden and Kanthack had argued from the fairly well known to the unknown. The more recent authors had reversed the process, for it had by no means been proved that the growths in question were genuine embryomata. Granting that they were embryomata, the speaker thought that, if only out of consideration for the student of the future, care should be used in applying the same name to things so different as a chorionic growth affecting the mother and an embryoma in a male subject. The theory expounded so clearly by Dr. Teacher was so simple and so attractive, one might say so fascinating in character, that it was sure to be accepted as a working hypothesis by all but the most sceptical critics. But granting that all the growths in question were of ovular or trophoblastic origin, would it not be well to adopt a nomenclature which would distinguish clearly those connected with pregnancy from those arising independently from that state? It was clear that a mother fatally invaded by the trophoblast of her own child would be a person of one generation killed by a tumour belonging to a person of the next generation—matricide, in fact. But a man slain by an embryoma in his testis would be a victim not of his own child, but of a potential brother or

sister—a case of fratricide,—a very different matter, and one worthy of a different name. It was easy to say that an individual had a trophoblast, be he your child or your brother, but the statement would not be easy to prove. We were aware that a trophoblast was essential to the implantation *in utero* of certain mammalian ova, but who would say that a chorion was essential in the development of a dermoid cyst?

Dr. F. W. Andrewes expressed his agreement with the main thesis of Dr. Teacher's paper, viz. that the tumour formerly known as deciduoma malignum is of fœtal origin, and derived from the chorionic epithelium. He was, however, of opinion that the term "syncytioma" was preferable to chorionepithelioma, as being less cumbrous, and expressing the striking histological feature of the growth without implying any theory to its origin. The term chorionepithelioma also tended to suggest a relation to the carcinomata, which Dr. Teacher was anxious to avoid. He referred to the great theoretical importance of admitting the fœtal origin of the growth, pointed out by Adami, inasmuch as the invading cells were derived from another organism, and rendered the assumption of an adventitious infecting microbe unnecessary. With regard to those syncytial tumours of the uterus which appeared to have no connection with a pregnancy, he was of opinion that the ground was much less certain; the supposed teratomatous origin of such growths required careful scrutiny. It was necessary to show that an aberrant included ovum might actually give rise to chorionic structures, and to find syncytial tumours arising in connection with undoubted teratomata. Until the present meeting he had never seen such proof. Both sarcoma and squamous-celled carcinoma might originate in dermoids, but Dr. Ritchie had shown that evening a syncytial tumour arising in a dermoid of the mediastinum in the male. Dr. Andrews thought this the most important of the many valuable specimens shown at the meeting; but it was a rarity, and more such cases were needed to establish Dr. Teacher's position. It was not shown that those rare cases of syncytial tumour of the uterus in which a pregnancy could be excluded were so absolutely identical with the ordinary form that it was needful to invent an included ovum to explain them. The acceptance of the view that ordinary syncytioma malignum is of chorionic origin does not compel us to accept such an origin for every syncytial tumour. Syncytial sarcoma is not a very rare thing. (Two specimens of mixed-celled endosteal sarcoma of bone were shown under the microscope, containing immense syncytia, almost comparable with those of chorionepithelioma.) Might not the rare cases of syncytial uterine growth having no connection with pregnancy be perhaps of this nature? Such a possibility was an additional reason for prefering the term syncytioma to chorionepithelioma.

Dr. Ritchie (Oxford) described the case of a young man who

during life was considered to be suffering from a malignant tumour on the anterior mediastinum of three months' duration, with secondary growths in the lungs. *Post mortem* there was found in the region named a mass which consisted partly of a dermoid cyst, partly of a solid tumour, which microscopically had the precise characters of a chorionepithelioma. Secondary growths existed in the lungs, liver, and spleen, and had the same microscopic appearances as the solid part of the primary tumour. Dr. Ritchie considered that this tumour was to be looked on as a teratoma developed from an included ovum, the part of which corresponding to the trophoblast had developed in a manner analogous to that part of the trophoblast from which an ordinary chorionepithelioma may arise. He would welcome, however, the discovery of other similar tumours, as the possibility of the dermoid part of the tumour having arisen from an epithelial inclusion from the third branchial cleft might be advanced. In such a case the malignant part of the growth might be looked on as an angiosarcoma of an accidental association. He had, however, never seen any tumour of those usually classed either as angiosarcomata or endotheliomata, which at all resembled a chorionepithelioma.

Dr. T. Arthur Helme (Manchester) expressed surprise at the sweeping character of some statements in the paper. He had understood Dr. Teacher to say that no case was on record that supported the sarcomatous nature of these tumours, and that no "deciduoma" with solely sarcomatous tissue had been recorded, that *all* these tumours are chorionepitheliomata, and that he had never seen maternal tissues growing after a fashion at all comparable with the cells of these tumours. In order to clear the way for these opinions Dr. Teacher ruthlessly brushes aside the maternal origin of those tracts of cells which are to be found in the intervillous spaces, and which we have looked upon as "decidual" (maternal), and boldly says that they are all of trophoblastic or ovular production. In support of this he (the speaker) had failed to hear any evidence adduced by Dr. Teacher except the similarity of appearance of the cells—an unsafe basis of opinion—and a drawing of one of Dr. Haultain's preparations, which had been shown upon the screen. This drawing had been "made in Germany," and doubtless the artist had unconsciously allowed his imagination to tinge his product with the ideas which he wished to represent; that was not sufficient evidence for the important statement made. He (Dr. Helme) had brought to the meeting a specimen of "deciduoma" which had occurred in his practice some three or four years ago, but had not been recorded, as on examination he had found that it supported the prevailing opinion that these tumours might be of "decidual" origin. On hearing Dr. Teacher's opinion of the impossibility of such an origin, he thought the specimen might

be of some value, and though, in the short time at his disposal, he could not do the case justice, he would briefly allude to it and report the case more fully subsequently. Dr. Helme then gave a brief history of the clinical symptoms and appearances. *Post mortem* there was found the tumour in the uterus with metastases in ovary, vagina, vulva, and both lungs. The microscopic appearances of *all* the growths, primary and metastatic, were *identical*—tracts of huge cells, evidently of short life-history, with larger necrotic areas, wide blood-spaces, hæmorrhages, and fibrinous deposits. The cells, he supposed, Dr. Teacher would claim as the offspring of the cells of Langhans's layer, but he thought they were of decidual origin; he had been unable to find any of those spreading protoplasmic masses characteristic of the syncytium. Some years ago he had made observations upon the histology of the pregnant and puerperal uterus (especially in the rabbit), and if one thing had impressed him more than any other it was the enormous hypertrophy which the maternal connective-tissue cells underwent; and he would call Dr. Teacher's attention to those huge plasmodia, of maternal origin, which were to be found not only in the uterine but also in the vaginal tissues. Shortly, he might state that the tumour which he now exhibited resembled in its broad features the sarcomata, but at the same time possessed special characters which demanded that it should be placed in a special class, for which the name "deciduoma" seemed eminently suitable. He claimed that this specimen showed the possibility of the decidual, *i.e.* connective-tissue origin of some at least of these tumours. As to the chorionepitheliomata, the theory that we had differentiated in the chorion a stratum of tissue which is neither fœtal nor maternal, and which is capable of giving rise to a malignant growth in its host which was neither sarcomatous nor carcinomatous, was fascinating; but before accepting a doctrine which would so completely affect our views as to the origin of tumours, we should demand explicit proof, and it seemed to him that this would not be forthcoming until it was demonstrated that what we had considered to be cells of maternal (connective-tissue) origin were really of trophoblastic origin, and until the source of the syncytium itself was identified.

JUNE 16TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—35 Fellows and 11 visitors.

ADJOURNED DISCUSSION

On "Chorionepithelioma and the Occurrence of Chorion-epitheliomatous and Hydatidiform-mole-like Structures in Teratomata," by JOHN H. TEACHER, M.B., C.M.

Dr. A. L. GALABIN said that he had from the first been a believer in the view that the so-called deciduoma malignum is the result of pregnancy, and that it is a fœtal epithelioma implanted upon the mother. He had listened, therefore, with great satisfaction to the convincing demonstration which Dr. Teacher had given of both these propositions. He had been himself convinced by the relation, not so much to pregnancy, as to vesicular mole. While pregnancy was common, the pregnancy of vesicular mole was estimated as only about one in 2000 pregnancies. Not more, therefore, than about one woman in every 20,000, at the most, would have had at any given time a vesicular mole within a year. But in deciduoma malignum, vesicular mole was the antecedent in something like half the cases, and this proportion had been maintained from the earliest record up to the present. It was possible, on this basis, to calculate by the mathematical theory of probabilities what was the chance against vesicular mole having occurred within a year before half of the cases of deciduoma malignum, if there was no causal relation between them. The result was that the probability increased very rapidly as the number of cases increased. Within eight or ten cases a probability of a million to one was reached, and when the cases amounted to forty or fifty the probability was an unimaginable number of billions of billions to one. He contended that there was already, at the time of the discussion in the Society in 1896, ample demonstration that there was a causal

relation between vesicular mole and deciduoma malignum, since out of forty cases then recorded, vesicular mole had preceded in eighteen. When the number recorded had reached ninety, the number preceded by vesicular mole was forty-nine. The relation to pregnancy in general would hardly be denied if that to vesicular mole were admitted, especially since the disease more often followed an abortion than a full-term pregnancy. He was surprised, therefore, that, at the former debate, Dr. Spencer was the only speaker who argued decidedly in favour of the connection. The existence of a similar structure in some cases of sarcoma of the testis was then quoted as an objection to deciduoma malignum being a result of pregnancy. But, if such a structure were found only in tumours classed as embryomata from their resemblance to the imperfect development of the ovum, he thought that this was not an objection, but an argument in favour of deciduoma malignum in the uterus being derived from fertilised ovum. He did not consider that embryomata were derived from an included ovum, the brother or sister of the individual who bore it. Such a brother-ovum was generally attached on the surface, and there was no reason why it should be in the testis or ovary rather than elsewhere. He thought that they were instances of imperfect parthenogenesis, or attempt at development of germ-plasm without union of the sexes. The germ-plasm was supposed to be normally concentrated in the testis or ovary, and therefore such tumours generally occurred there. But it was conceivable that there might be some aberrant fragment of it in such a situation as the mediastinum. Even if a structure resembling deciduoma malignum were found in other parts of the body, this would be no argument against its specificity in the uterus, or its being the result of pregnancy there, unless it could be shown that in the uterus deciduoma malignum occurred quite outside the age of possible pregnancy. Since malignant disease of the body of the uterus was much commoner after the menopause than before, deciduoma malignum, if it were an ordinary tumour, would be found long after the menopause. But, on the contrary, the average age for it was thirty-one, just the middle of the period of fertility. Although cases had been recorded up to the age of fifty-five, and as much as two years after the menopause, this was obviously no proof that they were not the result of pregnancy, since the disease might be latent for a time. It was a further step to show that the tumour was a chorionepithelioma. The chief proofs were—the continued vitality of villi after death of the embryo, as shown at the last meeting by a section of ovum retained five months *in utero;* the identity of appearance of the syncytium and the cell masses of deciduoma malignum with the syncytium and cell masses seen in early pregnancy, and especially in vesicular mole; the continuity of the syncytium with

the syncytium of the villi, when villi were present in the tumour; and the few cases recorded in which actual villi were present not only in the primary growth, but in metastases. He had shown at the last meeting a section of vesicular mole, with cell masses, as well as syncytium, resembling those of deciduoma malignum. The same was shown still better in the beautifully stained sections exhibited by Dr. Stevens, one from Dr. Galabin's case of deciduoma malignum. The size and appearance of the cells, their nuclei, and the karyokinetic figures in them were identical. He did not, however, think it advisable to change the name; since, if a name were in general use, it did not matter much that its derivation was erroneous. No one wanted to change the names of decidua reflexa or decidua serotina. In the term of deciduoma malignum had been comprised a definite clinical group of tumours, characterised not only by their sensation, but by their high malignancy, tendency to form metastases both in the neighbourhood and in the viscera, and to lead to extensive necrosis and formation of blood-spaces. Some few of these showed only cells and no syncytium, and had the appearance of sarcoma. They were, therefore, certainly not syncytioma, and it was difficult to show them to be chorionepithelioma, although he believed that they might be such in their origin. He did not think that Dr. Teacher's figures showed so conclusively that the cell masses of the tumour were directly derived from the Langhans layer of the villi. The point could best be studied in vesicular mole, which showed similar cell masses. If they were so derived, the first step ought to be the formation of a cluster of cells covered by a cap of syncytium. He had occasionally seen this; but more often the cell masses appeared to be separated from the villus by the syncytium. If syncytium and Langhans's layer were both modifications of the fœtal epiblast, it seemed probable that one might be converted into the other, and that syncytium might become differentiated into cells. Intermediate appearances might be seen both in vesicular mole and in deciduoma malignum. He thought that the form of deciduoma malignum in which only cells and no syncytium were seen, and which resembled sarcoma, might be an ultimate development of the more common form. It seemed chiefly to be found in advanced cases, in which the patient died from the disease without operation. This was so in a case mentioned at the last meeting, and in the case which was at first under his care, a section from which was shown by Dr. Horrocks. Dr. Teacher had pointed out that neither cell masses nor syncytium showed any intercellular substance or vessels. But in the infective border of the growth very small groups of cells could be seen springing up in the midst of stroma, and small fragments of syncytium, and these might be reduced to single cells, so that the general appearance resembled sarcoma. Thus if necrosis occurred of the original cell masses

and syncytium, only a sarcomatous-looking structure might be left. It would be of interest to know from those who had worked at cancer parasites whether the bodies regarded as parasites were found or not in deciduoma malignum. It was presumed that the only parasitism in the disease was that of the fœtal structures upon the mother; but it was not impossible that microbic parasites might infect the placenta. The elucidation of this point would be of value in the investigation of the origin of cancer in general.

Dr. Herbert Spencer wished to add his thanks to Dr. Teacher for the admirable demonstration, one of the best which had been given before the Society. He thought that Dr. Teacher had in his paper scarcely done justice to the London gynæcologists; it was in London, at University College Hospital, that the first case of deciduoma in this country had been observed (in 1889), and it was at the Obstetrical Society of London that the first case was published (in 1895.) It was also the discussion on that case and two others at the Obstetrical Society in 1896 that first aroused general interest in this remarkable disease in the United Kingdom. Dr. Teacher would find that many cases of the disease had been observed in London during the last few years, though they had not all been published, and when published, not always under the same name. A great deal too much attention had been devoted to the name. For his own part he preferred the name given by Karg to Sänger's case—*deciduoma maliquum;* the object of a name was to act as a label and not as a definition, and *deciduoma malignum* served the purpose of a distinctive label sufficiently well. He thought there was some inconsistency in Dr. Teacher's deprecating the inclusion of the disease in the classes of sarcoma or carcinoma and then calling it chorionepithelioma.

Dr. Spencer thought the chief merit for the discovery of this disease belonged to Chiari rather than to Sänger. It was in any case owing to Chiari's publication (1877), and the report of his cases in Ruge and Veit's 'Der Krebs der Gebärmutter,' that his own attention had been drawn to the remarkable occurrence of "cancer" of the body of the uterus after labour in young women of twenty-three and twenty-four years of age, and that he had been led to investigate the case alluded to above. With regard to the pathogeny of the disease, he thought it was absolutely established that it arose from the epithelial covering of the chorionic villi. In the discussion at the Society in 1896 ('Obstet. Trans.,' 1896, p. 181) he had opposed the view of Drs. Kanthack and Eden, and had given evidence that the disease originated in the products of conception; and in the 'Quarterly Medical Journal' for July, 1896,* he had written a paper giving

* "Deciduoma malignum" (with a table of forty cases), 'Quarterly Medical Journal,' July, 1896.

the principal facts of forty cases of deciduoma malignum, and regretted that these facts had not been allowed to prevail against the theories of the critics. He had on those occasions drawn attention amongst other points to the striking fact that in at least 45 per cent. of cases the disease followed a hydatidiform mole which itself shows overgrowth of its epithelial covering; and had alluded to Apfelstedt and Aschoff's case as proving, if the evidence were corroborated, the origin of the growth from chorionic villi. The corroboration has been forthcoming in several cases published since that date, which in his opinion clearly prove that these growths arise from the epithelial covering of the chorionic villi. The excellent demonstration given by Dr. Teacher would help to promulgate that view. There was one difficulty which he did not think the demonstration met satisfactorily—namely, the difficulty of distinguishing between an ordinary sarcoma and a deciduoma malignum in cases which contained no syncytium.

With regard to the structures resembling "chorion-epithelioma" met with in teratomata, he had not seen a specimen, and would prefer to wait before expressing an opinion. It did, however, appear strange that chorionic villi, or the epithelium of the villi, or only structures which developed into chorionic villi, should be "included" in the body of a fœtus.

Dr. T. W. Eden said that he wished to express his high appreciation of the splendid demonstration that Dr. Teacher had given at the last meeting upon this subject. He had observed that several of the preceding speakers had taken occasion to deprecate the trend of the 1896 discussion upon deciduoma malignum, and to dissociate themselves from the decision which had been reached, he would not say by the Society, but by the special Committee appointed to investigate the cases laid before the Society upon that occasion. For his own part he avowed himself an unrepentant sinner in so far as that discussion and report were concerned; and he reminded Dr. Spencer that although he (Dr. Spencer) had just told them that he had always believed in the fœtal theory of deciduoma malignum, yet he had signed the report of the Committee which stated that the cases were sarcomata. After reading once more the report of the discussion and the papers laid before the Society in 1896, he really believed that in view of the facts then before them the decision of the special Committee was a wise one, and under the same circumstances he would be prepared again to take up the same position. It must be remembered that at that time the position of this great question was very different from to-day. He might briefly indicate the then position as follows:—Firstly, there was no doubt that in their broad general characters the cases recorded at that time bore a close resemblance to sarco-

mata, viz. in their age-incidence, in their dissemination of venous elements, in the total absence of lymphatic invasion, and microscopically in the absence of a connective-tissue stroma, and the presence of masses of multinucleated protoplasm resembling giant-cells; secondly, the clinical evidence of connection with pregnancy was in a considerable proportion of the then recorded cases unsatisfactory; thirdly, the theory of Marchand as to the identity in microscopic characters of the tumour elements with those of the chorionic epithelium was new, and unsupported by independent evidence; fourthly, the actual demonstration of the development of the tumour from chorionic villi had not been forthcoming—indeed it was open to doubt whether villi had then been proved to occur in these tumours at all;—and lastly, syncytial elements, then believed to be the essential elements of the tumour, were shown to occur in the male subject where origin from chorionic epithelium was out of the question. In these circumstances, he considered that the Committee could have come to no other conclusion and had nothing to regret with regard to the 1896 discussion. Having said that, however, he was quite prepared to admit that the course of events had shown that the decision then arrived at was wrong. In the short paper he had read to the Society in 1896 he had indicated that in his opinion the theory of Marchand could only be satisfactorily proved by demonstrating the actual development of the tumour from structures definitely recognisable as placental relics. That condition, he admitted, had been amply met by a number of cases since, and the importance of this point could not be too much emphasised, for all other considerations were subordinate to it. The new growth having been definitely traced back to the normal tissues from which it arose, its origin must be regarded as settled. But the position since 1896 had changed in other respects, all of which lent support to this view. A large body of expert pathological opinion had grown up in support of the theory of Marchand which Fellows of that Society, most of whom were not pathological experts, could not question. Again, the puzzling class of cases in which the primary disease occurred in the vagina, the uterus being free from disease, cases which had been a serious stumblingblock to him in 1896, had now received adequate explanation. Schmorl and Veit had shown that normal villi and fragments of chorionic epithelium could be deported by the blood-stream to distant parts, and there either become absorbed or possibly undergo malignant changes resulting in the development of disease in remote organs. This interesting class of cases was now a large one, and instances had been reported where primary chorionic epithelium had occurred in the vagina, labium majus, tube and ovary, lungs and brain, the uterus in each case being free from disease. It was therefore evident that the difficulties present in 1896

had now been removed. It was worth while for the Fellows to remember that, although the decision of the 1896 Committee had been erroneous, yet in regard to two important matters suggestions made in that discussion had actually now received general acceptance. In the short paper which he (Dr. Eden) had then read, he had expressed the opinion that the syncytial and cellular elements in deciduoma malignum had the same origin, the syncytial masses being formed by degeneration and fusion of the cellular elements. This view was now accepted. And not only so, but Peters had shown that in the human ovum the physiological prototypes of these elements bore precisely the same relation to one another; the chorionic epithelium was at first entirely cellular, but on the cells coming in contact with the maternal blood, degeneration and fusion of cells occurred, producing what he called the plasmodial or syncytial layer. In yet another respect the 1896 discussion had made an important contribution to the subject, and that was in pointing out the fact that syncytial masses similar to those found in deciduoma malignum occurred in malignant testicular growths whose origin from placental relics was out of the question. This fact had recently been discovered by Schlagenhaufer, and had caused a great deal of perturbation in the minds of their German colleagues. Schlagenhaufer's case was clearly a teratoma, while Kanthack had regarded the specimen shown to the Society in 1896 as a sarcoma. It was a mystery to him why this observation of Schlagenhaufer's should be regarded as in any way affecting the validity of Marchand's theory of chorionepithelioma; that theory rested upon actual demonstration of the histogenetic origin of the growth, and no such observations as Schlagenhaufer's could upset it. Yet this latter authority had proposed that we should regard as teratomatous, *i. e.* as due to the "inclusion" of an ovum, a large proportion of the accepted cases of chorionepithelioma in the uterus and elsewhere. This appeared to him (Dr. Eden) to throw the subject into needless confusion, for the "inclusion" theory was not required to account for chorionepithelioma, unless cases should ever be found to occur under circumstances in which pregnancy could be scientifically excluded. In conclusion, he said that it appeared to him that the pathogenesis of this growth having been satisfactorily settled, the only questions remaining were clinical questions. For instance, we were quite unable to explain why these growths varied so greatly in malignity; why those cases in which villi were found in the tumour should be less malignant than others; why cases where the primary growth was in the vagina were less malignant than the uterine cases; why metastases should disappear after removal of the primary growth alone; and lastly, why in one remarkable case recorded by Fleischmann, partial removal of the primary growth should be followed by disappearance of the remainder and

complete recovery. Our attention should be directed to these points in future.

Dr. F. J. McCann said he ventured to join in the discussion because he had been fortunate in having had under his care at the Samaritan Hospital three cases of "deciduoma malignum." These cases exemplified three distinct clinical types: (1) where the growth is polypoid or circumscribed; (2) where the growth is diffused throughout the uterine mucous membrane; (3) where the uterine cavity is filled with blood-clot. The first patient, aged 35 years, was admitted into the hospital on July 13th, 1901. She was extremely anæmic, owing to her having had continuous hæmorrhage since April 1st. This hæmorrhage was alleged to date from a miscarriage, but the history of the passage of ovuline structures was not definite. She had had four children, the youngest being three years old. In August, 1900, she had a miscarriage at the second month, followed three weeks later by an attack of hæmorrhage lasting fourteen days. Her menstruation then became regular, and continued so until April, 1901. Her uterus was found to be enlarged to the size of a three-months pregnancy, regular in outline, freely movable, and soft in consistence. On July 17th, under anæsthesia, the uterine cavity was dilated, and a distinct bulging was felt at its upper and back part. This was covered by smooth mucous membrane. On attempting to separate the lower portion of the tumour, the finger could be passed into the uterine wall, and the surrounding softened tissue made one suspect malignant disease. The uterus was therefore removed by vaginal hysterectomy, and the patient has remained well.

The second patient was aged 46. She had had six children, the youngest being aged nine. She never had a miscarriage. Her menstruation was regular, scanty, lasting only two days. In August, 1901, she had an attack of bleeding, clots and fluid blood being passed *per vaginam*. The bleeding ceased, and did not recur until December, 1901. After this date there was daily loss of blood from the vagina. She was admitted to hospital on March 19th, 1902. On examination she was found to be extremely anæmic. Her uterus was enlarged, mobile, and painless. The fundus could be felt to have reached the mid-point between the umbilicus and the symphysis pubis. She was anæsthetised, and on introducing the finger into the uterine cavity (which did not require preliminary dilatation), the walls were found to be covered with irregular nodules readily breaking down. Several necrotic pieces came away on withdrawing the finger. A profuse fœtid discharge issued from the uterine cavity. A bluish flattened nodule about the size of a sixpence was detected on the anterior vaginal wall. It was commencing to necrose on the surface. As this was obviously a secondary growth, no operation was attempted. The uterine cavity was swabbed out

in order to diminish the septicity of the discharges. The general condition of the patient improved under treatment so much that she was able to be out of bed on April 13th. Towards the end of that month her condition became worse. She began to suffer from increasing dyspnœa, with signs of secondary growths in the lungs, and she died on May 23rd, 1902. At the necropsy numerous secondary nodules existed in both lungs.

The third patient was aged 53 years. A full report of this case has already appeared in the 'Journal of Obstetrics and Gynæcology of the British Empire' for March, 1903.* Dr. McCann did not further refer to it save to say that the disease occurred in a woman after the menopause, whose last pregnancy, nine years previously, terminated at the third month. The uterus when removed was found to be filled with blood-clot, thus resembling what is described as a cavernous or angio-sarcoma of the uterus—sarcoma telangiectodes. Such cases are comparatively rare, and Dr. McCann thought that most of them would in the future be shown to be examples of "deciduoma malignum." Concerning the ætiology of the disease, it must be admitted that the number of specimens now in existence showing the origin of the growth from the coverings of the villi had completely revolutionised our ideas, and had proved that the neoplasm springs from this locality.

On studying the cases described, it will be seen that, although in Case 1 the patient probably had a miscarriage, the history and the evidence of her own medical attendant were against this assumption. In the other two cases the occurrence of a recent pregnancy was not proven. In order to explain the incidence of the disease in the last two cases, we must assume that some fœtal relics had existed *in utero*, and had formed a starting-point for the new growth. The occurrence of six cases of this disease at the Samaritan Hospital within a comparatively short space of time goes to show that this malady cannot be so rare as is generally accepted; and no doubt more examples will be reported in the future. It is probable, too, that the degree of malignancy has been over-estimated. This is doubtless subject to considerable variation, some types exhibiting excessive malignancy, whilst others, especially the polypoid or circumscribed types, show this character to a lesser degree. If it be proved that the secondary growths do disappear, then we are justified in dealing surgically with cases in which secondary nodules exist in the vagina, unless the general condition of the patient contra-indicates operative interference. Dr. McCann did not think that all the important problems connected with this disease had been solved, and he advocated careful and accurate records of all the cases being made without having in view the support of any theory as to its causation. In conclusion, he heartily thanked

* 'Transactions Obstetrical Society of London,' vol. xliv, 1902, p. 294.

Dr. Teacher for the able and instructive manner in which he had presented the subject to the Society.

Dr. Lockyer said he was glad to have the opportunity of saying how very thoroughly he appreciated listening to Dr. Teacher's most able paper, and of expressing the pleasure it gave him to follow his admirable demonstration. He felt that the Obstetrical Society of London owed Dr. Teacher a debt of gratitude for the infinite pains he had taken in demonstrating his work in the study of chorio-epithelioma. The obligation was the more emphasised by the fact that Dr. Teacher was a visitor, and had spared no labour and expense in the preparation of his instructive demonstration. It was no small satisfaction to Dr. Lockyer to find that his own interpretation of the nature of the growth which has passed under the name of "deciduoma malignum" coincided with Dr. Teacher's views. In January, 1902, Dr. Lockyer read a paper before this Society on "A Case of Chorio-epithelioma with Pulmonary Metastases," and by a series of lantern slides he traced the origin of the syncytial masses and Langhans' cells back to the walls of the chorionic villi, and endeavoured to point out that if we accept fœtal trophoblast as the precursor of Langhans's layer of syncytium, the term "deciduoma" is a misnomer for a growth containing these elements in its composition. For such growths a name should be chosen which will indicate their true origin; and after careful study of eight specimens of this disease Dr. Lockyer chose the term of chorio-epithelioma for his two published cases as being the most fitting nomenclature for this purpose. Dr. Teacher had gone further than Dr. Lockyer was formerly prepared to go by concluding that every so-called deciduoma malignum was a chorio-epithelioma. Dr. Lockyer had stated that his experience had led him to the conclusion that there were cases in which the histological features differed in essential details from chorio-epithelioma. The specimens which led Dr. Lockyer to this conclusion were prepared by Mr. Corrie Keep, who kindly allowed Dr. Lockyer to make drawings from them, which were shown at the demonstration in January, 1902. Dr. Lockyer has again examined these specimens, and with his now larger experience in the study of these growths, obtained from the examination of five more specimens since his paper was written, he has no hesitation in saying that although syncytium is not well represented, the cells described by him as "modified connective-tissue cells, like those found in normal decidual membrane," are in reality derivatives of Langhans's layer. In accordance with this conviction, these growths fall into the category of chorio-epithelioma, in spite of the fact that no definite syncytium is present. In other words, syncytium is not the leading feature of these tumours. Sänger's original sarcoma deciduo-cellulare has been shown at this Society by Dr. Teacher. It is a typical

chorio-epithelioma, as proved by the presence of both syncytial masses and Langhans's cells. The only distinction which Dr. Lockyer is at the present time prepared to insist on as existing between these growths is that some contain syncytial derivates and Langhans's cells, whereas others contain Langhans's cells while the presence of syncytium is difficult or impossible to prove. His previously expressed opinion that some of these growths could be referred to the maternal decidua he now regards as a point which still requires demonstration, but which may for the present be left an open question.

In the discussion on Dr. Lockyer's paper, Dr. Horrocks asked the question, "Could Dr. Lockyer say that in all cases of this malignant growth which had followed vesicular mole there had been syncytial elements?" As far as his experience went, Dr. Lockyer answered this question in the affirmative. Four of the eight cases known to Dr. Lockyer, and in which he found syncytium, followed vesicular disease of the chorion. Dr. Horrocks's own specimen proved this point. Dr. Lockyer had examined it carefully and found abundant evidence of the syncytium being represented, so that his statement that "the malignant sequela of a vesicular mole is invariably a syncytioma" needs no alteration. Dr. Lockyer wished, however, to again emphasise the fact that syncytium is not the essential feature of a chorio-epithelioma, as Dr. Horrocks seemed to think. Whilst leaving the lecturer to reply to the various adverse criticisms on his paper, Dr. Lockyer felt it was incumbent upon him to mention that he had himself made a drawing of Dr. Haultain's specimen some two years ago, and is prepared to vouch for the faithfulness of the picture drawn from the same specimen by Dr. Teacher's German artist. A short abstract of the case shown by Dr. Lockyer at this meeting of the Society was as follows:—Mrs. V—, aged 26, twice pregnant. The first pregnancy ended in the expulsion of a hydatidiform mole; the second ended in the birth of a healthy child at term. One month after the child was born the mother developed a swelling in the right labium majus, and another in the left inguinal glands; subsequently another deposit was found in the vagina. The external growths were opened under the impression that they were pyæmic, but only blood-clot and necrosed tissue came away. Death occurred eleven weeks after confinement. The symptoms and course of the disease during the patient's stay of seven weeks in the Hospital for Women at Brighton were mainly those of septicæmia; signs of pulmonary consolidation supervened only a fortnight before death. The primary growth was confined to the body of the uterus; the uterine walls were not perforated, the adnexa were healthy, and there was *no infiltration of the parametrium such as is found in uterine sarcomata.* There were secondary growths in the lungs, pancreas, kidney, and vagina.

The primary tumour and all the secondary deposits showed syncytial derivatives and Langhans's cells, the syncytium being most abundant in the pancreatic metastases. The clinical notes of this case were kindly supplied by Mr. H. H. P. Johnson, House Surgeon to the Hospital for Women, Brighton. The case was under the care of Dr. Robert Sanderson. Dr. Hobhouse made the *post-mortem* examination. Drawings of the uterine tumour and the secondary growths were prepared by Dr. Lockyer.

Dr. H. Russell Andrews showed two specimens of chorio-epithelioma. The first was an old specimen which had been in the museum of the London Hospital for many years, labelled "Cancer of the uterus." Microscopical examination proved it to be a chorio-epithelioma. The second was shown before the Society in 1886, by Dr. Lewers, as a specimen of a circumscribed sarcoma of the uterus, with secondary deposits in the vagina and lungs. Dr. Lewers had kindly allowed Dr. Andrews to re-describe it. Sections showed typical chorio-epitheliomatous structure. He commented on the fact mentioned by Dr. Haultain that in some cases the growth seemed to be killed by coagulation of the blood around it, and said that in the majority of cases the extreme malignancy and rapid development of metastases were due to the fact that, although the growth always occurs in blood-vessels, it does not cause thrombosis. This is probably to be explained by the presence of syncytium, which seems to have, with endothelium, the property of not coagulating blood with which it is in contact. Although in some sarcomata, especially in those sometimes called peritheliomata, cells are often seen which resemble syncytium, yet the vacuolation which is so characteristic of chorio-epithelioma is not seen in them. The complete absence of vessels in chorio-epitheliomata is also an important point in distinguishing these tumours from sarcomata (in which vessels, although often ill-formed, can always be found). He wished to join with the other speakers in congratulating Dr. Teacher on his admirable paper and demonstration.

Dr. Hebb said that in the one case which had passed through his hands, while the general aspect was that of a polycellular sarcoma, there were appearances reminiscent of epithelial cancers. The micro-sections exhibited certain histological features which had not been alluded to by previous speakers. These were attempts, sometimes apparently successful, at the formation of new blood-vessels, the existence of irregular mitoses, and the presence of cell inclusions or "cancer-bodies," the last two being of common occurrence in carcinomata. He thought that eventually it would be demonstrated that the maternal and fœtal structures participated as to the site of origin of these growths, sometimes the one, sometimes the other location having the greater share.

Dr. Teacher, in reply, thanked the Society for the exceedingly kind manner in which his paper and demonstration had been received. The keen interest manifested by members in the discussion of the subject had been most gratifying. The results also were very pleasing to him, inasmuch as the views which he had set before the Society appeared to have met with very general approval. In fact, the remarks of various speakers, and especially the summing up of Dr. Eden, left very little in the way of criticism for him to answer. Dr. Teacher felt himself bound to express his approval of the "unrepentant-sinner" attitude of Dr. Eden in defending the "decision" of the Society in 1896. The discussion on that occasion was a good one, and the conclusions arrived at were most natural under the circumstances, having in view the material before the Society. Dr. Teacher's criticism of that discussion had been written without knowledge of the fact stated by Dr. Eden that only the preliminary notice of the case of Apfelstedt and Aschoff was before the meeting of 1896. At the same time, even admitting that, Dr. Teacher adhered to his opinions that the Society had hardly appreciated the strength of the case which Marchand had worked up from the histological resemblances of the tumour and the pathology of hydatidiform mole; and that it was a pity they had delayed the consideration of the new evidence for so long. But there had been one advantage in that delay. The case which had been brought before the Society by the late Professor Kanthack was at that time absolutely inexplicable, and he did not wonder at the influence which it had exercised over the minds of the members of the Pathology Committee. He had always felt a doubt as to the right of Professor Kanthack to describe such a curious tumour off-hand as a sarcoma; but owing to unfortunate circumstances (viz. the early death of Professor Kanthack) the materials for a criticism of his view were wanting until the re-discovery of this kind of tumour by Schlagenhaufer. Doubtless the members of the Society would say that there was not yet a satisfactory explanation of the tumour of the testis; but he thought that they must grant that it was no longer justifiable to call it sarcoma, and also that it could not be held, in the face of the other evidence we now possessed, to affect the specificity of the ordinary chorionepitheliomata. Dr. Teacher briefly reviewed the various interpretations which were now being offered of those embryomata (or whatever they might be called), the relative merits of which he felt must be left for future consideration. In reply to the question whether placenta had ever been found in an undoubted teratoma, Dr. Teacher quoted the case of Maydl.* Laparotomy in an anæmic, but well-developed man of 19 years, revealed a

* Reference given in Literature of paper.

tumour lying between the folds of the root of the mesentery. It consisted of a well-formed trunk and limbs without a head, but in the place of it a long tuft of hair. This imperfect fœtus was enclosed in an amniotic sac. A thickening of the amnion connected with the superior mesenteric artery showed the histological structure of the placenta. There was also a case in a sheep, described by Rathke in 1830, in which a female fœtus was attached to the head of a male fœtus by an umbilical cord, which passed into the skull and ended in a well-formed placenta growing on the dura mater.*

Turning to certain points raised, Dr. Teacher admitted that limitations of time had caused his opening statement to contain more of assertion than of proof; but on the other hand, the critics who had raised that objection seemed to have failed to follow the demonstration of the relationship of the normal placenta and chorionepithelioma through the simple hydatidiform mole and malignant mole, the series of slides comprising which could hardly have been made more complete. He also protested against the questioning by two of his critics of the value of evidence, simply and solely because it had been "made in Germany." His experience of our German colleagues was that they were a most kind and courteous lot of gentlemen, and as keen and conscientious seekers after truth as any men. In his inquiries he had encroached freely upon their time, and they had given it to him ungrudgingly. The race doubtless was no more free than any other from inaccurate and unreliable members, but his own observations had led him to the opinion that the latter got their deserts as surely and swiftly in Germany as anywhere else. The "assertion" that the view of Veit remained purely hypothetical was based upon the fact that Dr. Teacher, in December, 1902, asked Prof. Veit if a case had yet been found which demonstrated the sequence of events which it supposed. He understood Prof. Veit's reply to be negative. On the other hand, in the 188 cases summarised, the presence of villi was noted in 33. A number of these were old malignant moles, not examined microscopically; but there remained a large number of cases in which the origin of the tumour from the chorionic epithelium had been directly demonstrated. Twenty-eight of the cases (including the malignant moles, eleven in number) followed molar pregnancy, four abortion, and one (Langhans's No. 2) delivery at term. That the cases in which villi were found (excluding the malignant moles) showed a relatively low degree of malignancy, was a fact; he could not explain it. The matter is considered in the paper.

Dr. Fothergill spoke of many cases in which the connection with pregnancy appeared to be absent. Excluding the tubal

* Cited from art. Missbildungen, by Marchand (*vide* Literature).

cases, there remained 181 which Dr. Teacher had synopsised. In sixteen of these the occurrence of a preceding pregnancy was not clear from the history. In two of these villi were present; in four cases no history was obtained, either because they were cerebral cases, the nature of which was discovered only at the autopsy, or for other valid reasons. Of the ten remaining cases, nine occurred in women between twenty-four and forty-four. Was it possible to exclude pregnancy in those cases? In many cases the disease was continuous with the pregnancy; this fact would explain the absence of a distinct preceding pregnancy in most of those nine cases. The most probable explanation to Dr. Teacher's mind of McCann's case was renewed pregnancy. There were several cases in women of nearly the same age who had not been pregnant for many years, and then developed tumour. In eight out of nine cases over the age of fifty the preceding pregnancy was molar. As an example might be taken the case of Gunther (recently reported by Marchand, a photograph from which was included in Dr. Teacher's demonstration). The patient was 53¼ years old; her last child was born in her thirty-ninth year; and then, after thirteen years, she had a hydatidiform mole which passed on into chorionepithelioma. An apparent menopause was recorded in two clear cases besides that of McCann. An explanation which might apply to all these long interval cases had been offered by Marchand. It was well known that portions of epidermis included in the closure of some of the embryonic clefts might lie latent ten or twenty years, or even longer, and then develop into tumours. In view of that he thought there was nothing strange about portions of trophoblast lying latent three or four years and then springing into renewed activity. The hypothesis that those cases might be really of teratomatous nature Dr. Teacher regarded as quite unnecessary.

Cases of chorionepithelioma without syncytium had been mentioned. There were three cases in which the typical sprawling masses were absent, but none of these could really be said to contain no syncytium, as they all showed syncytial derivatives like the syncytial wandering cells. These cases, and the "pure syncytial" cases, all of which actually contained individual cells, although not typical Langhans-layer cells, Dr. Teacher would regard as varieties of no great importance in view of the relationship which existed between the two layers of the chorionic epithelium. In all of his tumours the relative amount of the different elements varied considerably in different parts of the growth. In regard to the question of nomenclature, Dr. Teacher said that "syncytioma" was a bad name, because the syncytium is not *the* characteristic element of chorionepithelioma. The Langhans-layer cells and large individual cells of intermediate type were equally characteristic. Almost any feature of the

growth taken by itself could be paralleled from other tumours, but not the combination of features. Lastly, the most characteristic thing was the physiological prototype. He preferred a name which informed one of the source of the tumour, and he thought that the members of the Society need not be afraid of committing themselves to a particular view. He was pleased to find that in this he had the support of Dr. Eden. The most appropriate name, therefore, was chorionepithelioma, or, if they preferred it, chorio-epithelioma. He was also in favour of allowing the historic deciduoma malignum as a clinical term; it was so well known, and so generally used. Moreover the view implied in it was so completely abandoned that the term might be said to have ceased to be misleading. If there were a real "deciduoma" it had not yet been demonstrated; but when so experienced a pathologist as Chiari was inclined to reserve his opinion Dr. Teacher thought they need not dogmatise; but neither need they "hedge." Dr. Teacher concluded by again thanking the Society.

JULY 1st, 1903.

Edward Malins, M.D., President, in the Chair.

Present—32 Fellows and 6 visitors.

Books were presented by Drs. Cullingworth and Herman, and the St. Thomas's Hospital Staff.

Alice Mary Corthorn, M.B., B.S.Lond., was admitted a Fellow of the Society.

John Hazelwood Clayton, M.B. (Birmingham), and Herbert Malins, B.A.Oxon. and M.B.Edin. (Birmingham), were declared admitted.

The following candidates were proposed for election:—Samuel James Murdoch Cameron, M.B., Ch.B. (Glasgow); Ethel May Vaughan, M.D., B.S.Lond.

A CASE OF "GRAPE-LIKE" SARCOMA OF THE CERVIX UTERI, FUNGATING INTO AND INFILTRATING THE WALLS OF THE VAGINA, IN A CHILD TWELVE MONTHS OLD; EXTIRPATION OF UTERUS AND VAGINA.

By H. J. Curtis, B.S.Lond., F.R.C.S.Eng.

(Introduced by Dr. Herbert Spencer.)

The child, aged twelve months, was brought to the Out-patient department of the Royal Hospital for Children and Women, Waterloo Bridge Road, S.E., on January 28th, 1903, for "a large swelling in the stomach and a discharge" from the vagina of about five or six weeks' duration.

Two months previously to being brought to the hospital she had had bronchitis. She had not seemed well since this time, when headache began to be suffered from and the abdomen became swollen. The mother now noticed when the child cried that a "lump projected from the left side," and there was a good deal of discharge from the vagina.

The child "was always very white, and had never had a colour since birth."

Family history.—The patient was the second child, the first, a boy, dying when three weeks old. One miscarriage occurred after the birth of the patient. The labour in each case had been normal in every respect. No instruments were used. There were no other children. The parents, each thirty years of age, and married for 2½ years, were quite healthy. No family history of malignancy.

The condition of the child when seen in the Out-

patient department on the day of admission, January 28th, 1903, was as follows:

She was well nourished, but pale and anæmic-looking. There was a dirty grey, purulent-looking, vaginal discharge escaping from above the hymen, which, like the other parts bounding the vaginal outlet, was swollen, congested, and dusky grey in tint.

The discharge coming from above the hymen appeared as if escaping from an elongated cervix uteri, but subsequent observation makes it evident that the vaginal outlet must have been nearly occluded with fungating growths arising from the vaginal walls, the discharge issuing from between these little masses to appear at the vulva.

Before this, however, as the child lay waiting for examination, the vaginal discharge was noticed to have formed quite a pool on the couch, so as to be obviously much more profuse than in the ordinary so-called "strumous" vulvo-vaginitis.

The abdomen was seen to be distended and felt to be very tense, the girth at the most prominent part being seventeen inches. When disturbed for examination purposes the child cried, but did not otherwise seem to be in pain.

The abdomen was found to be occupied with a smooth, rounded, tense swelling arising from the pelvis and extending from the symphysis pubis to midway between the umbilicus and xiphisternum, and then passing rather more towards the left than the right side. The fingers could just be inserted between the top of the swelling and the left costal margin. On the right side the tumour reached nearly to the right linea semilunaris.

The right flank was resonant on percussion and free from swelling. The tumour in the middle line, and extending well into the left flank, was dull on percussion.

The constant crying of the child during attempts at examination greatly interfering with accurate investigation, it was admitted for further observation, with a temperature of 99·2° Fahr.

On the day after admission, on January 29th, the abdomen became more tense, and the child cried a good deal through the day. The bowels acted, the stools being natural.

The temperature fell from 99·2° to 97°. The child looked somewhat livid and dusky. There was evidently some respiratory embarrassment, which increased during the evening, the pulse being rapid and rather feeble.

The condition of collapse appearing to demand exploration, the writer was sent for, and at midnight, January 29th, median laparotomy was performed.

Operation (January 29th, 1903, midnight).—The peritoneal cavity was exposed through a median incision extending from the umbilicus to a point one inch above the symphysis pubis, and subsequently enlarged in an upward direction. The shape, general appearance, and actual size of the swelling previously felt are well shown in Fig. 1. The tumour, where exposed, was almost spherical, covered for the most part with smooth peritoneum, and seen to be arising from the pelvis. Springing from the anterior surface, a short distance below its rounded upper extremity, were seen the congested fundus uteri and uterine appendages, below which (indicated in Fig. 1 by the slightly congested circular area) was a firm band of adhesions passing forward to the anterior parietes. Below this the bladder was visible, bound down to the front of the swelling. With some difficulty the two ureters, firmly incorporated with the antero-lateral aspects of the tumour, were discovered passing forward to enter the base of the bladder. A circular, raised, button-like swelling, flattened and congested on its surface, crowned the summit of the main swelling, slightly to the right of the middle line. This is shown in Figs. 2 and 3, and appears to have resulted from the growth beginning to fungate outwards, through the investing peritoneum, with formation of adhesions to the neighbouring structures.

At this stage, and, indeed, until closer examination of the tumour after removal, its exact origin was not clear,

but the condition appeared to be due to malignant disease of the uterus—probably sarcoma.

Complete removal of the tumour, wherever originating, was obviously the only possible treatment. Holding aside the intestines, the bladder was first carefully isolated from the front of the tumour, to which it was firmly adherent; the ureters, similarly adherent to the antero-lateral aspects of the swelling, were separated, the curvilinear grooves from which they were enucleated being indicated by shading in Fig. 1, at the junction of the smooth, peritoneal-covered, upper rounded part of the tumour with the roughened, somewhat triangular surface seen below. The bladder and ureters being thus freed, the connections of the uterine appendages, and the lateral aspects of the tumour below these, with the sides of the pelvis, were severed, securing the vessels as they came into view, the hæmorrhage being unimportant. At its lower extremity the thin-walled stretched vagina proved to be very friable, giving way with very little traction when the tumour was completely isolated in other directions.

The child's collapsed condition by this time prevented very close examination of the pelvis, but so far as could be ascertained all obvious disease had been removed. The laparotomy wound was rapidly closed, and the usual restoratives administered (hot water and brandy enema, strychnine, etc.). Brandy ʒj was ordered with each of the three-hourly feeds of milk and barley water. Small doses of opium were also ordered.

When seen on the following morning, January 30th, the general condition had greatly improved. The pulse was stronger, the frequency being 148—152 per minute, the respiration rate being 32—36. The temperature, 99·2° on the day of admission, January 28th, was 97° on the day of operation, and 99°—100° during the succeeding day. The child was quite quiet, but free from any discomfort, and attempted to play with toys; but its passive condition resembled that observed in the shock following a burn. Death occurred at 10.30 p.m. the same day.

At the autopsy there was no evidence of peritonitis. A mass of secondary growth, about half the size of the terminal phalanx of the little finger, was found apparently involving the left iliac gland just below the brim of the pelvis; the left common iliac vessel at its bifurcation lay completely embedded in the growth. Sections of this mass showed it to be a fairly firm, pinkish-white, fleshy growth, evidently sarcomatous. There appeared to be no other secondary growth in any other part or organ of the body.

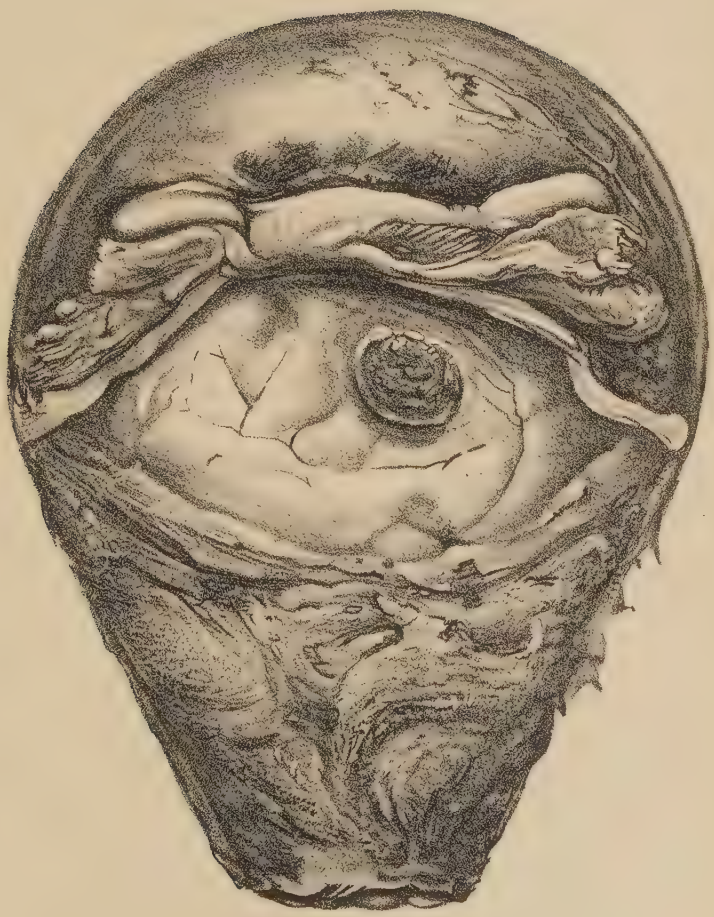
The bladder was healthy.

Both kidneys showed evidence of some back pressure, the pelvis being dilated. The body otherwise was perfectly healthy.

Description of parts removed.—Reference to Plates X and XI, drawn life-size, will make it clear that the mass excised is pear-shaped, the upper or intra-abdominal portion being covered with smooth peritoneum, the surface of the narrower lower portion being ragged. The junction of the smooth and rough surfaces is indicated by faintly shaded grooves, from which the ureters were freed during the operation, the bladder being adherent to the centre of the rough surface seen below.

The upper pole of the mass is directed forward, its highest point exhibiting a slightly raised, congested area, where on section the growth is seen to be commencing to break through the peritoneal covering so as to result in adhesions to the neighbouring structures. The remains of adhesions to the anterior abdominal wall are indicated by a similar but less congested area, seen in the front of the mass below the uterus. The uterus, with its appendages, is seen lying flattened down on the highest part of the anterior surface of the swelling, the peritoneum covering the body of the uterus, especially posteriorly, and the appendages, being seen to be much congested.

The posterior surface of the swelling is covered everywhere with smooth peritoneum. Plate XI, drawn from the left half of a median section made through the entire mass removed, reveals the fact that this swelling



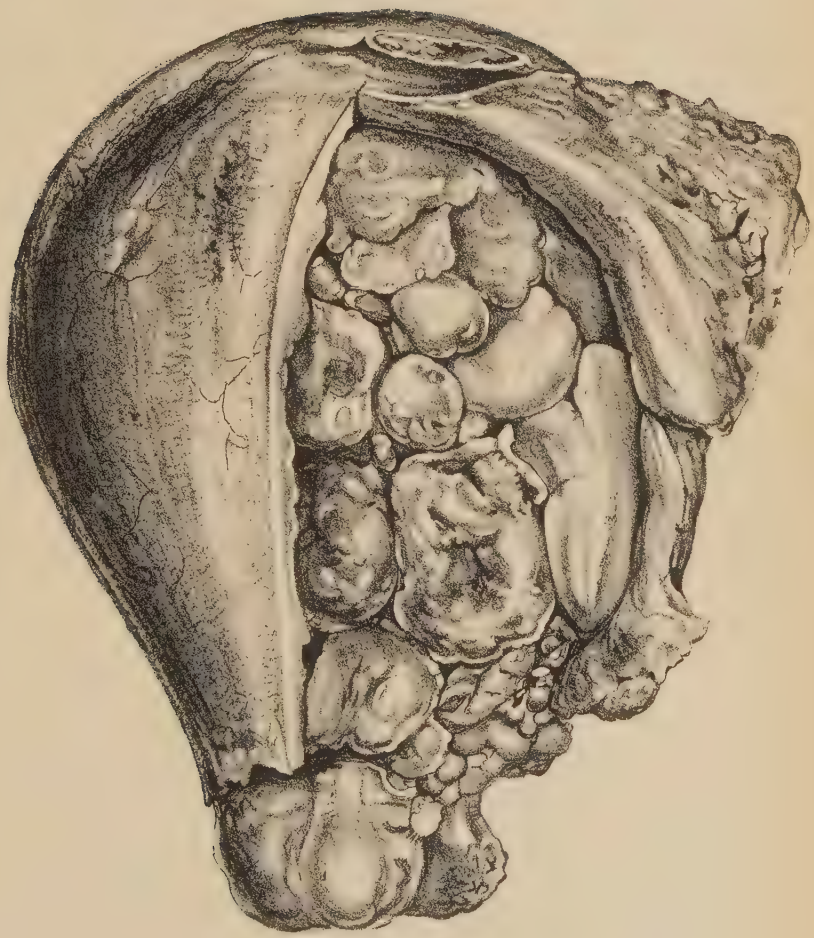
Illustrating Mr. H. J. CURTIS's Specimen of "Grape-like" Sarcoma of the Cervix Uteri.
Front view of extirpated Uterus and Vagina (natural size).
(*For description see Text.*)

Bale & Danielsson, Ltd., Lith.

Illustrating Mr. H. J. CURTIS's Specimen of "Grape-like" Sarcoma of the Cervix Uteri.

(*For description see Text.*)

Bale & Danielsson, Ltd., Lith.



Illustrating Mr. H. J. CURTIS's Specimen of "Grape-like" Sarcoma of the Cervix Uteri.

(*For description see Text.*)

Bale & Danielsson, Ltd., Lith.

is almost entirely composed of the vagina enormously distended and its walls infiltrated with growth seen to be spreading from the cervix uteri, both lips being involved, the anterior being apparently the lip chiefly and primarily affected. The size of the infantile uterus, elsewhere healthy, presents a striking contrast with that of the vagina.

As will be seen in Plate XI, the growth, spreading away from the cervix so as to infiltrate the vaginal walls, has, by traction, brought the body of the uterus forward so as to lie flattened against the front of the vagina (refer also to Plate X). Further, the entire thickness of the anterior wall of the cervix, apparently at the level of the anterior fornix of the vagina, is drawn sharply forward (downwards, in the new position figured), so that there results a sort of diverticulum from the uterine canal, which thus comes to be T-shaped, the long axis of the uterus in its new position being directed from above downwards and forwards. Plate XI also shows the much greater infiltration of the anterior than the posterior vaginal wall with growth, to which the bladder and ureters were so firmly adherent. The position of the band of adhesions passing between the anterior abdominal wall and the anterior surface of the tumour, below the level of the uterus, is indicated by the irregularity in profile view of the growth seen infiltrating the upper part of the anterior wall of the vagina.

The growths in places (especially perhaps where springing from the posterior vaginal wall) present a more fleshy, congested, or hæmorrhagic and fibrous appearance,—that is to say, are more typically sarcomatous in appearance than is evident in the case of the "grape-like" masses seen in Plate XII.

The cavity of the vagina is everywhere so much encroached upon, right down to its outlet, as to be almost obliterated. It forms a mere slit, as it were, bounded by very irregular surfaces of the growths fungating into it from the vaginal walls. In its general shape (Plate XI) in an antero-posterior direction, it may be compared

with a sectional view of a distended bladder and first part of the urethra, being ovoid above and narrowed into a tube, passing vertically downwards, below.

A median section made through the posterior aspect of the tumour reveals the condition shown in Plate XII, drawn life-size. A flap of what proves to be the vaginal wall, infiltrated with growth, has been reflected so as to expose a large collection of pearly, semi-translucent, cyst-like swellings of varying size. Some of the "cysts" are rather less translucent than others, and some show areas of dirty chocolate tint, which from microscopic evidence appear to be the result of hæmorrhages. The resemblance of this mass of "cysts" to a bunch of grapes, or a hydatidiform mole, is obvious.

The "cysts" on section, as will be seen from Plate XI, are of semi-solid consistence, the appearance presented to the naked eye being closely comparable with myxomatous tissue. Many of the larger ones measure as much as 3 cm. ($1\frac{3}{16}$ inches) in diameter.

Measurements.—The length of the exposed portion of the uterus is—

Posteriorly	2 cm. ($\frac{25}{32}$ inch).
Anteriorly	$\frac{1}{2}$ cm. ($\frac{6}{32}$ inch).
Omitting the uterus itself, the length of the tumour from its apex along its posterior wall to the line of reflection of the peritoneum is	19·75 cm. ($7\frac{3}{4}$ inches).
The length of the tumour anteriorly, from below the insertion of the uterus to the line of reflected peritoneum (below the bladder insertion), is	6 cm. ($2\frac{3}{8}$ inches).
The greatest horizontal girth of the mass .	$29\frac{1}{2}$ cm. ($11\frac{5}{8}$ inches).

Microscopic report.—(1) In a portion of the *posterior lip of the cervix uteri and adjacent fornix of the vagina*, removed for examination, the changes appear to be confined almost entirely to the stroma. There are about the usual number of cervical glands, lined by a single layer of epithelium. Apart from considerable dilatation, the glands

present a normal appearance. Their presence affords no justification for the title of adeno- (myxo-) sarcoma adopted by some writers (Mundé, Winckel). Numerous bands of involuntary muscle-fibres, seen in their length and in cross-section, are present in the stroma, being normal to this region. These fibres are separated by sarcomatous tissue, round- and spindle-cells of medium size, the large and characteristic oat-shaped nuclei being very obvious in places. The spindle-cells are seen in direct contact with some of the normal glandular structures already mentioned. In a considerable extent of the section, small round (apparently sarcoma) cells lie in small alveoli composed of a very delicate reticulum, the groups of cells being widely separated from one another by an almost structureless stroma, the result probably of œdematous infiltration of the tissues. No myxomatous tissue is visible. Numerous lymphatics of medium size are present. Beneath the investing peritoneum there is marked engorgement of vessels, the tissues around, but not elsewhere, being infiltrated with extravasated blood-corpuscles.

(2) Sections of the "*grape-like*" *growths* present the following striking features :—(*a*) Large columnar epithelial cells with large oval nuclei form the outer layer, which was, unfortunately, readily detached during the handling incidental to fixation, etc. The layer beneath consists of small flattened cells, arranged regularly almost end to end. Still deeper are seen other cells, with large round or ovoid nuclei, scattered irregularly in the stroma. (*b*) A remarkable number of dilated, thin-walled, branching, and engorged blood-vessels are seen throughout the section, lying in (*c*) an obviously œdematous, finely reticular stroma, containing large and medium-sized spindle, round, and polygonal cells, the spindle-cells containing large oat-shaped nuclei, and the nuclei in the round and polygonal cells being in a very active state of proliferation. No myxomatous tissue is present. The "grape-like" growth may therefore be briefly described as an œdematous, mixed spindle- and round-celled sarcoma.

(3) Sections of a portion of *vaginal wall infiltrated with growth, forming a projection on its inner surface.* The growth is seen to be arranged in finger-like processes, covered with stratified epithelium. The appearance of round- and spindle-cells seen elsewhere is here reproduced, the œdematous infiltration separating the cells being, however, less marked. Giant-cells are present here and there throughout the papillæ.

(4) Sections of *the secondary deposit in, or near, the left iliac lymphatic gland.* The common iliac artery near its division lies embedded in this mass of growth. Section shows the artery filled with a mass of clot, very numerous leucocytes being seen entangled in the fibrin. The growth itself around consisted of spindle- and round-cells, the bodies of the round-cells being very degenerate, the delicate reticulum forming the stroma being thereby rendered more obvious.

Cases of cervical sarcoma, according to Whitridge Williams, may be divided into two groups,—one including probably several varieties; the other, easily distinguishable, being known as "grape-like" sarcoma (das traubige Sarcom), a non-committal term first applied in 1892 by Pfannenstiel, though Spiegelberg, in 1879, was the first to draw attention to this group, recording one case in 1879, another in 1880, and referring to one such case of his own, which had been reported by Kunert as far back as 1874.

Numerous descriptive titles have been applied to this group, and are indicated in the literature quoted at the end of this paper. For these references and much information I must express my great indebtedness to J. Whitridge Williams' exhaustive monograph, entitled "Contributions to the Histology and Histogenesis of Sarcoma of the Uterus."*

Up to 1894, eleven cases of "grape-like" sarcoma appear to have been recorded—the twelfth, Kleinschmidt's case, alluded to by Pfannenstiel in 1892, being probably

* 'Amer. Journ. of Obstetr.,' vol. xxix, 1894.

an angiosarcoma, and not really forming a member of this group. Emmet's case in a girl 19½ years old, reported* in 1902, was thought to be the sixteenth on record. The present case therefore appears to be the seventeenth on record. Omitting Kleinschmidt's and also Winckel's doubtful cases (see pp. 332, 333), however, Emmet's case would be the fourteenth, and the one now recorded really the fifteenth on record, and the first case reported in England. Lewers † says he has not met with such a case himself.

Spiegelberg's description of his first case, macroscopically and microscopically (given in Williams' monograph), corresponds so closely with what was found in the present case that its reproduction here may therefore be pardoned.

"Spiegelberg in 1897 described a case in a seventeen-year-old girl in whom he found the anterior lip of the cervix thickened and enlarged. It was covered on its margin as well as on its surface by a group of oval, yellowish-brown outgrowths, one or two centimetres long, which looked like transparent cysts. These were readily crushed when touched, and contained a thick sticky fluid. The anterior lip of the cervix was removed with scissors.

"Nine months later the girl returned with the entire vagina filled by a growth which resembled a hydatidiform mole in appearance, and also arose from the anterior lip by numerous strong thread-like pedicles. The mass was again removed, and rapidly recurred; eventually the entire uterus was removed, and the patient died later from recurrence.

"The tumours were examined by Weigert, who found that the cyst-like masses were covered by a single layer of cylindrical epithelium, and their interior composed of large, round, spindle-shaped, and branching cells, which were separated from one another by clear spaces traversed

* 'Amer. Journ. of Obstetr.,' March, 1902 (abstracted May, 1902, by the 'Journal of Obstetrics and Gynæcology of the British Empire,' p. 565).

† 'Cancer of the Uterus,' 1902.

by fine threads. In these spaces lymph-corpuscles were found; and, between the cells, thin-walled blood-vessels. In the more compact portions of the growth, and in the pedicles of the 'cysts,' large cells without the clear ground substance were seen. The growth at first suggested a myxomatous sarcoma, but fresh specimens failed to give the characteristic mucin reaction with acetic acid. Spiegelberg accordingly concluded that the appearance was due to œdema, the result of stasis in the numerous lymph sinuses of the cervix, and suggested for it the above-mentioned name.

"Pfannenstiel, in 1892, agreed with the majority of observers that the growths in question were not myxomata or myxo-sarcomata, and believed with Spiegelberg and Weigert that they were sarcoma infiltrated with lymph, and could be designated with propriety as 'sarcoma lymphangiectaticum et hydropicum.' He showed conclusively that the growth in his case arose from the superficial portions of the cervical mucous membrane, to whose papillary structure it owed its peculiar form; and in all probability that it was connected in its origin with proliferative changes which he observed about the lymphatics and blood-vessels." (Williams.)

Bland-Sutton and Giles * refer to Pernice's well-known case, and reproduce two illustrations. They say, "Pernice describes a very remarkable example of sarcoma which involved the vaginal portion of the cervix.

"It had a racemose appearance, the grape-like bodies being composed of cells, some of which were oat-shaped, others were typical spindles, many of them presenting a cross-striation indistinguishable from that of a striped muscle. In the basal parts of the tumour gland-like spaces existed, lined with cylindrical or with cubical epithelium. (These were derived from the glands in the cervical endometrium.)

"After removal this tumour quickly recurred; it was removed a second time, but reappeared and rapidly

* 'Diseases of Women,' pp. 217, 218, figs. 71, 72.

infiltrated the uterus, forming a large mass; death was speedy.

"On microscopic examination of the recurrent tumour no striated spindles were found, and the tumour had the character of a simple spindle-celled sarcoma."

The great majority of the cases collected by Whitridge Williams occurred in persons under twenty years of age, or past the menopause, and only three in the intermediate period. Smith's case occurred at three and a half years of age, Ahlfeld's at fifteen years. So that it would appear that the case now reported, aged one year, is the youngest so far met with.

"This age distribution enables one to distinguish 'grape-like' sarcoma of the cervix from squamous-celled carcinoma of the cervix, exceedingly rare before the twentieth year, and occurring most frequently just before the menopause. A positive diagnosis between squamous carcinoma of the cervix and the other groups of cervical sarcomata referred to cannot be made, according to Cullen,* without a microscopic examination, records of cases showing that even then it is at times impossible to reach a clear diagnosis."

Williams adds the interesting information that in all the cases he collected, death occurred from regionary metastases, with the exception of Byford's patient, of whom it is only stated that she recovered from the operation. True metastases occurred, however, only in the cases of Kunert and Kunitz.

Emmet's patient died a year after the first operation, at which a deep wedge-shaped piece of the posterior lip of the cervix, including the growth, was cut away with scissors. At the second operation, seven months later, high amputation of the cervix was performed, and the mass now encircling the cervix, and filling up the vagina with grape-like growths, removed. Discharge recurred in four months' time, and death a month later, the growth being described as a spindle-celled sarcoma.

* 'Carcinoma of the Uterus,' 1901.

It is clear that the only hope lies in early diagnosis and complete hysterectomy.

In conclusion I wish to express my best thanks to Dr. A. G. R. Foulerton, Mr. T. W. P. Lawrence, and Dr. Herbert Spencer, for very kind assistance during the preparation of this paper and of the sections of the growth.

Literature of Cases of "Grape-like" Sarcoma of the Cervix, mostly derived from Whitridge Williams' Monograph (Amer. Journ. of Obstet., vol. xxix, 1894).

AHLFELD.—"Diffuse Sarcomatöse Entartung des Uterus und der Vagina," Wagner's Arch. f. Heilkunde, viii, 560, 1867.

BYFORD.—"A Case of Vaginal Hysterectomy," Amer. Journ. Obstet., vol. xxi, p. 1203, 1888.

EMMET.—Amer. Journ. Obstet., March, 1902 [also abstracted in the Journal of Obstetrics and Gynæcology of the British Empire, May, 1902, p. 565].

KLEINSCHMIDT.—"Ueber primäres Sarcom des Cervix uteri," * Arch. f. Gyn., xxxix, 1—16, 1891.

KUNERT.—"Ueber Sarcoma uteri," Arch. f. Gyn., vi, 111, 1874.

KUNITZ.—"Ueber Papillome der Portio vaginalis," D. i., Berlin, 1885.

MUNDÉ.—"A Rare Case of Adeno-myxo-sarcoma of the Cervix," Amer. Journ. Obstet., xxii, 1889.

PERNICE.—"Ueber ein traubiges Myosarcoma striocellulare uteri," Virchow's Arch., cxiii, 46, 1888.

PFANNENSTIEL.—"Das traubige Sarcom des Cervix uteri," Virchow's Arch., cxxvii, 305, 1892.

REIN.—"Myxoma enchondromatodes arborescens colli uteri," Arch. f. Gyn., xv, 187, 1880.

SMITH, THOS. C.—"Sarcoma and Multiple Mucous

* N.B.—Whitridge Williams does not believe this case to be a true "grape-like" sarcoma, but an angeiosarcoma, as Kleinschmidt himself said.

Polypi of the Uterus in a Child," Amer. Journ. Obstet., vol. xvi, p. 555, 1883.

SPIEGELBERG.—(*a*) "Sarcoma colli uteri hydropicum papillare," Arch. f. Gyn., xiv, 178, 1879.

(*b*) "Ein weiter Fall von papillären hydropischen Cervix Sarcom, und Extirpation nach Freund," Arch. f. Gyn., xv, 436, 1880. Nachtrag zu dem im Bd. xv, mitgetheilten Fall, Arch. f. Gyn., xvi, 124, 1880.

THOMAS.—"Uterine Polypi," Practical Treatise on the Diseases of Women, 5th ed., Philadelphia, pp. 559, 560, 1880.

WEBER.—"Ueber die Neubildung quergestreifter Muskelfasern, insbesondere die regenerative Neubildung derselben, nach Verletzungen," Virchow's Arch., xxxix, 216, 1867.

WINCKEL.—"Adeno-myxo-sarcoma cervicis,"* Lehrbuch der Frauenkrankheiten, 432, 1886.

WINCKLER.—"Ein weiterer Fall von Sarcoma papillare hydropicum cervicis et vaginæ," Arch. f. Gyn., xxi, 309, 1883.

Dr. HEYWOOD SMITH thought it would be advisable to ascertain if possible, as the child was so young, the condition of the mother during pregnancy, and also the condition of the liquor amnii and placenta, in order to ascertain if there were any morbid process that might account for the inception of the disease.

SECTIONS SHOWING MUSCULAR TISSUE IN THE PSEUDO-REFLEXA IN TUBAL PREGNANCY.

Shown by Dr. H. RUSSELL ANDREWS.

IN the discussion on Dr. Andrews's paper on the "Anatomy of the Pregnant Tube" last May, one of the speakers said that "there was remarkably little direct evidence in support of the contention that the ovum was

* Whitridge Williams doubts whether this case belongs to this group.

implanted in the muscular layer of the tubal wall. With the exception of the case described by Füth, there was practically no evidence at all in support of it."

There was more evidence than the speaker thought. As Dr. Andrews said in his paper, both Aschoff and Heinsius have confirmed Füth's views. Aschoff (1), in 1899, described a "pseudo-reflexa" which contained some of the internal muscular layer. Heinsius (2), in 1901, found a thick layer of muscle separating the ovum from the lumen of the tube. He says, "The partition-sheet at the periphery consists of a thick muscular layer. The nearer one approaches the middle, the thinner does this sheet of muscle become. In at least two thirds of this partition-sheet, muscle can be clearly seen. When muscle cannot be clearly seen, isolated muscle-fibres . . . can be seen."

With all due deference to Couvelaire, Dr. Russell Andrews thought that positive evidence such as this could be taken as a proof that the site of the ovum was, at least sometimes, intra-muscular.

Dr. Cuthbert Lockyer showed a section at the May meeting of this Society, in which some observers at least thought that muscle-fibres could be seen in the capsularis. Dr. Russell Andrews wished, if possible, to get some independent evidence in support of the statements made in his paper, and had fortunately been enabled to do so.

A few weeks ago Dr. Herman had kindly given him a pregnant tube, sections of which he showed. The sections were taken at right angles to the long axis of the tube, towards the uterine end of the ovum.

The ovum projected into the lumen of the tube, but was separated from it by a very definite "partition-sheet," to borrow Heinsius' expression. In this partition-sheet could be seen muscular fibres. In the section stained with hæmatoxylin and eosin one saw a layer made up of fibres which are arranged regularly and contain long nuclei. He thought most observers would say that this layer consisted of muscle-fibres. However, to exclude the possibility that this layer might be made up of very regularly

arranged fibrin, Dr. Bulloch had kindly stained some sections by Gram's method, and others by van Gieson's method. In the former there was no blue stain in this partition-sheet, so that one might exclude fibrin. In the latter the fibres in the partition-sheet had taken up a yellow stain. Dr. Russell Andrews considered that these sections conclusively proved the view first held by Füth that the site of the ovum in the pregnant tube is intramuscular,—in other words, that a sheet of muscle separates the ovum from the lumen of the tube.

References.

1. Aschoff.—Beiträge für pathol. Anat. und allgemeine Pathol., 1899, Bd. xxv, p. 273.

2. Heinsius.—"Beiträge zur Lehre von der Tubargravidität, etc.," Zeitschr. für Geb. und Gyn., 1901, Bd. xlvi, p. 385.

With regard to Dr. Russell Andrews's specimen, Dr. Lockyer remarked that the capsularis was not so hyaline as that in his own specimen, and gave it as his opinion that definite muscular structure could be seen in the section stained by van Gieson's method.

FIBRO-MYOMA OF OVARY.

Shown by Lt.-Col. A. J. Sturmer, I.M.S.

(Referred to Pathology Committee for report.)

TUBAL MOLE COMPLICATING CARCINOMA OF THE CERVIX.

Shown by Dr. Arthur H. N. Lewers.

Dr. Lewers showed a uterus removed by vaginal hysterectomy for carcinoma of the cervix. There was a

tumour of the left Fallopian tube, of the size of a Tangerine orange, which was removed at the same time. Subsequent examination showed that this tumour was a tubal mole, chorionic villi being seen in sections of it under the microscope. The growth affecting the cervix was a squamous-celled carcinoma. The patient from whom the specimen was removed was a married woman aged 27, who had had five children, the last a year and nine months before she came under observation. She was admitted into the London Hospital on April 22nd, 1903. She had suckled the last child for seven months, and had menstruated regularly during that time. Four months previous to admission to the hospital she said that for two periods her courses had come on, "but not quite as they ought to have done." Six weeks before admission she went a week over her proper time. Then she passed some clots, and from that time onwards there had been a red vaginal discharge up to the time of her admission.

Dr. Lewers believed that the occurrence of tubal pregnancy in association with carcinoma of the cervix was a very rare condition. He had never met with a similar case before. The patient made a good recovery after the operation.

Dr. Amand Routh alluded to the great rarity of such conditions as malignant growths or fibroid tumours of the uterus associated with tubal gestation. The fact that there was such infrequent association might have some value in the consideration of the question of the causes of tubal pregnancies.

Dr. Heywood Smith asked how far up the uterine cavity the disease in that organ extended, and whether the mucous membrane of the oviduct was affected, as some such morbid condition of the epithelium might possibly have been a factor in the arrest of the ovum in its passage towards the uterus.

OPHTHALMIA NEONATORUM, ITS ETIOLOGY AND PREVENTION.

By Sydney Stephenson, M.B., C.M.,
OPHTHALMIC SURGEON TO QUEEN CHARLOTTE'S HOSPITAL.

(Introduced by Dr. W. S. A. Griffith.)

(Received April 1st, 1903.)

In the opinion of those well qualified to judge, ophthalmia neonatorum is the cause of more blindness than any other local disease, excepting perhaps atrophy of the optic nerve. Magnus estimated that in Germany it accounted for upwards of 10 per cent. of his 2528 cases of blindness, a result substantially confirmed by Trousseau in France, by Schaefer in Russia, and by Oppenheimer in America. The Royal Commission on the Blind, the Deaf, and the Dumb (which reported in 1889) estimated that about 7000 persons in the United Kingdom had lost their sight from the disease. This number of disabled people may be taken to represent an annual burden upon the commonwealth of £350,000, or upwards of one-third of a million pounds sterling.

It has been proved to demonstration that in ninety-nine cases out of a hundred ophthalmia neonatorum is preventable; and that it may be prevented, moreover, by the use of a few simple precautions.

It would be a mere truism to say that the term "ophthalmia neonatorum" is applied generally to every inflammation of the conjunctiva in a newly-born baby. But there is ophthalmia and ophthalmia. Some of the forms are harmless, or nearly so, whereas others are grave enough to account for a large percentage of blindness. As regards the serious class, it may be stated that they are almost invariably due to the specific microbe of gonorrhœa, while the others are associated with microbes of several different kinds.

Our first point of inquiry, accordingly, may be directed towards ascertaining in what proportion of cases the gonococcus can be demonstrated.

Name.	Reference.	Cases.	Percentage with gonococci.
Kroner	Vers. Deut. Aerzt., 1844 . .	92	68·47
Haab	Corr. f. Sch. Aer., 1885 . .	16	87·50
Widmark	Hygeia, 1885	25	76·00
v. Ammon	Münch. med. Woch., 1900 . .	100	56·00
Guerola	Ann. de Oftal., 1900 . . .	25	100·00
Neisser	Zeits. f. Aug., June, 1901 . .	92	68·47
Andrews	New York Medical Journal, 1890 .	122	100·00
Hirschberg	Central. f. prak. Aug., p. 396, 1898	32	100·00
Kopfstein	Wien. med. Woch., 1891 . .	51	58·82
Francisco	New York Eye and Ear Infirmary Reports, Jan., 1895	40	75·00
Chartres	Rev. générale d'Ophtalmologie, 1891, p. 351	100	44·00
Gonin	Rev. Méd. de la Suisse Rom., 1899	38	58·00
Thomin	Thèse de Paris, 1901, p. 32 . .	20	70·00
Reyling	American Journal of Ophthalmology, Oct., 1897	14	71·42
Cohn	Collective Investigation, Berlin, 1896, p. 34	553	52·98
Groenouw	Bericht. d. Ophthalm. Ges. in Heidelberg, 1898	40	35·00
Alt	American Journ. of Ophthalmology, April, 1901	17	52·94

The foregoing table shows that in the practice of seventeen observers, gonococci were found in 61·68 per cent. of the 1377 cases. The proportion ranged from a minimum of 35 per cent. to a maximum of 100 per cent. The differences thus brought to light are somewhat striking, a fact that may be accounted for in several ways, of which, perhaps, the most important are (1) the social class of the patients, (2) the methods of bacterioscopic diagnosis, and (3) whether the disease had been treated or not before the discharges were examined for gonococci.

Amongst 76 cases of ophthalmia neonatorum recently investigated by me, gonococci were found in 41, or 53·94 per cent. Adding to the foregoing the figures I published a few years back on this subject ('Ophthalmia

in Newly-born Children,' 1898), it will be found that of my 121 cases of ophthalmia neonatorum, gonococci were demonstrated in 71—that is, in 58·67 per cent.

The total number of cases at our disposal, then, is 1498, and gonococci were present in 60·17 per cent. As the numbers dealt with are tolerably large, we shall scarcely err if we assume that about two-thirds of all cases of ophthalmia in newly-born babies are due to the micrococcus of gonorrhœa. The practical importance of this generalisation lies in the fact that in ophthalmia the cornea seldom suffers unless gonococci be the cause of the conjunctival inflammation.

The other micro-organisms that have been found in ophthalmia neonatorum are the following, named in the order of their relative frequency:—(1) the pneumococcus; (2) the Koch-Weeks bacillus;* (3) the diplobacillus of Morax-Axenfeld; (4) the *Bacterium coli;* (5) the Klebs-Loeffler bacillus; (6) the pneumobacillus; (7) common pyococci; (8) streptococci; and (9) *Micrococcus luteus.*

It will be apparent, therefore, that a first necessity in the more exact diagnosis of ophthalmia neonatorum is the bacteriological examination of the secretion from the conjunctiva. In my opinion, no figures of so-called "purulent ophthalmia" should now be accepted unless this obvious precaution has been taken. It is true that, after some practical experience, there is not much difficulty about identifying most cases of true gonorrhœal ophthalmia, but the diagnosis can never be said to rest upon a certain and scientific basis unless gonococci are actually demonstrated. There are, indeed, cases when the signs are so slight that nobody from a casual examination would suspect that gonococci lay at the root of the mischief, and no amount of mere clinical experience will enable one to identify such

* Under this head is included the micro-organism described by Dr. Zur Nedden ('Klin. Monatsbl. f. Augen.,' 1900, p. 173) as the "pseudo-influenza bacillus," and found by him in a case of ophthalmia neonatorum. To judge from Nedden's description, this is identical with the Koch-Weeks bacillus.

cases with even a tolerable approach to certainty. The following is such a case recently met with at the North-Eastern Hospital for Children:—William B—, aged 19 days, was brought on February 26th, 1902, with his right eye inflamed. He was the first child, and was born at term after a natural labour. His eye became inflamed on the seventh day, so that we clearly had to do with an instance of "secondary infection." It showed a little yellowish-white discharge; the lids were neither swollen nor reddened; the eye could be well opened by the baby; the cornea was clear; and the tear-passages were apparently normal. A note was made at the time to the effect that the case did not resemble the gonorrhœal form of ophthalmia. Nevertheless, by means of cover-glass preparations, gonococci were found to be tolerably numerous in discharge from the eye. I could quote several similar cases.

The difficulty of diagnosis is certainly not lessened by the existence of so-called "abortive" cases of gonorrhœal ophthalmia, of which a good instance has lately been reported by Dr. E. Ammann ('Klin. Monatsblätter f. Augenheilkunde,' xxxv, 1897, p. 307). In that case the infant, when seen on the fifth day after birth, showed a trivial conjunctivitis, the symptoms of which were stated to have existed from birth. It was associated with gonococci. The usual treatment was prescribed, and on the following day the secretion had much diminished, and it disappeared, along with the other signs of inflammation, in a very short time.

On the other hand, what looks clinically like a case of gonorrhœal ophthalmia sometimes proves, on bacteriological investigation, to be associated not with Neisser's coccus, but with some other micro-organism, especially with the pneumococcus or the *Bacterium coli*. There is no need to occupy time by quoting cases in support of this statement.

It may be fairly concluded from what has been said that gonorrhœal ophthalmia cannot be diagnosed in the absence of a bacteriological examination of the discharge from the eye, a point in which it resembles gonorrhœa itself.

In my experience, the bacteriological diagnosis of gonococci offers no particular difficulties as regards secretion from the conjunctiva, whatever it may do in other parts of the body. I can hardly help thinking that there has been a little tendency to exaggeration in some quarters as to the difficulty of the differential diagnosis of these micro-organisms. The intra-cellular groups of *numerous* biscuit-shaped diplococci, which are readily decolourised by Gram, but which retain the basic aniline dyes with some tenacity, are very characteristic. The double staining with pyronin and methyl green (Pappenheim) also yields excellent results. Indeed, cultures would not be necessary were it not for the fact that Hugland ('Klin. Monatsbl. f. Augenheilk.,' 1900, Beilageheft, p. 72) has recently described a case of severe purulent ophthalmia in a boy of five months, in the pus from whose eyes he found intra-cellular diplococci, which by means of cultures were shown to be the *Diplococcus intracellularis meningitidis* of Weichselbaum and Jaeger. Moreover, it is possible, although the author denies the fact, that the same microbe was observed by Krukenburg ('Klin. Monatsbl. f. Augen.,' 1899, p. 271) in conjunctivitis, and called by him the "pseudo-gonococcus."* Hence, in order to differentiate between the two microbes—the gonococcus and the meningococcus—it appears that we must inoculate agar-agar and incubate the tubes, when the former organism will not grow, while the latter will yield an abundant whitish cultivation. It must, however, be added that, so far as I am aware, the *Diplococcus meningitidis* has not yet been found in the ophthalmia of newly-born babies.

The ophthalmia produced by organisms other than the gonococcus, generally speaking, agrees in the following points:—it is milder, has a shorter duration, and, except when due to the Klebs-Loeffler bacillus, seldom affects the cornea. Thus, of thirty-eight of my gonorrhœal cases,

* C. Fränkel ('Zeitschrift f. Hygiene u. Infectionskrankheiten,' 1899, Band xxxi) described in the same year three cases of pseudo-membranous conjunctivitis in children associated with the meningococcus.

exactly 50 per cent. showed corneal damage; while of thirty-nine non-gonorrhœal cases, the cornea was affected only in 17·94 per cent. Some of the latter were almost certainly gonorrhœal, but as they did not come under treatment until very late in the disease, gonococci could not be demonstrated.

Many investigations have been made into the bacteriology of the normal conjunctival sac; but, curiously enough, no little difference of opinion still exists with regard to the subject. One school, represented by Arnold Lawson, Franke, and Jameson, holds that the healthy conjunctiva is often relatively sterile; whereas a second school, of which Morax, Randolph, and Gifford are the chief exponents, believes that such organisms as the *B. xerosis*, the *S. p. albus*, and the *S. epidermidis albus* are practically always present, although perhaps in an attenuated state. So far as I am aware, the conjunctival sac of the newly-born baby has not yet been investigated bacteriologically. This fact induced Dr. A. W. Sikes, pathologist to Queen Charlotte's Hospital, and myself to carry out a series of investigations upon the eyes of newly-born babies immediately after the cord had been cut, and before the eyes had been touched in any way. In twenty babies thus examined, the culture tubes were found to be sterile in fifteen instances, while in the other five sarcina aurantiaca, flava, and alba, and a yeast-like oidium albicans, were found. It is important to notice that in no single instance was a pathogenic micro-organism demonstrated.

Vaginal discharges appear to be common accompaniments of pregnancy, especially in the lower classes. Investigations made by Cederschold ('Medical Gazette,' 1840, p. 382) so long ago as the year 1832 went to show that genital discharges existed in 137 out of 328 pregnant women. Haussmann ('Die Bindehaut-Infection der Neugeborenen,' 1882) found purulent or mucous secretions in 249 of 250 pregnant women! Oppenheimer ('Arch. f. Gynäk.,' xxv, 1885), amongst 108 inmates of the Heidelberg Maternity Hospital, discovered gonococci in 27 per cent.

Dr. G. G. van Schaick ('New York Med. Journ.,' 1897, p. 598) has recently drawn attention to the frequency of gonococci in married women suffering from leucorrhœa. He examined bacteriologically scrapings from the vaginal rugæ and neighbouring parts in 65 women, and found gonococci in 26 per cent. It is important to note that these women were all of fair social status, and that no female whose position "made her infection a professional perquisite was knowingly included in the list." It is a somewhat curious fact that, from all I can hear, the experience of Queen Charlotte's Hospital is at variance with the above statements. It would be interesting to know whether this is the general experience of the London lying-in institutions.

Now the actual infection of the baby's eyes with gonococci may come about in three possible positions: (1) in the maternal passages either before or during the act of birth; (2) almost immediately after birth; and (3) one or several days after birth.

All the evidence at our disposal points to the second as by far the commonest mode of infection. The germ-laden discharge from the maternal passages clings about the eyelids and eyelashes, and, as a rule, is carried into the conjunctival sac either by the blinking of the baby or by the water, sponges, or towels used for the first bath. This mode of infection is spoken of as "primary."

This being so, it becomes easy to understand that the disease, in most cases, makes its appearance within three days of birth, as shown in the following table:

	Cases.	1—4 days.	4—8 days.	After 8 days.
Uppenkamp . .	328	58·84	35·97	3·35
von V. Hecker . .	100	54·00	46·00	—
R. Köstlin . . .	15	53·33	26·66	13·33
E. T. Collins . .	32	78·13	12·50	9·37

In respect of this table, it should be noted (*a*) that all kinds of infections, primary and secondary, are grouped together; and (*b*) that no attempt has been made to distinguish between gonorrhœal and non-gonorrhœal cases. It is improbable that a gonorrhœal infection contracted soon after birth would manifest itself later than the fourth day, and the table shows that roughly two-thirds of all cases appeared within that period. Cases occurring after that time, if gonorrhœal, are "secondary" inoculations, as from the articles used in the lying-in room, or from the fingers of the mother or attendants, or are caused by micro-organisms other than the gonococcus. A table is appended of my own cases in which the gonorrhœal are distinguished from the non-gonorrhœal cases:

	Cases.	1—4 days.	4—8 days.	After 8 days.
Gonorrhœal . .	41	80·48	7·31	12·19
Non-gonorrhœal .	35	57·14	37·14	5·77

The mode of infection first mentioned—namely, that within the maternal passages—must be assumed to have occurred when a baby is actually born with ophthalmia or develops symptoms of the malady within a few hours after birth. A child, as well known, normally traverses the vagina with closed eyelids, and, as the junction between the lids is watertight, morbid secretion can hardly enter the conjunctival sac under ordinary circumstances. That could, however, readily come about during face presentations, the application of forceps, or by digital examinations on the part of the accoucheur. Some of the cases of ante-partum infection can be explained by a rupture of the membranes having taken place several hours or even days before the child was born, thereby allowing gonococci to reach the conjunctival sinuses. The temperature of the parts may possibly account for the relatively rapid development of the inflammatory process. Magnus ('Klin.

Monatsbl. f. Augen.,' 1887, p. 385) and Bellouard ('Thèse de Paris,' 1892) have each reported instances of this kind. Parichew ('Annales d'Oculistique,' t. cix, 1893, p. 313) has related a case in point, where an ill-nourished baby, as soon as it was born, was found to be suffering from ophthalmia, associated with opacity of the cornea. Gonococci were demonstrated in secretion from the eyes. The membranes, according to Parichew, had ruptured three days before the beginning of the labour, which lasted about 12½ hours and was normal in every way. The following is a brief account of one of my own cases :—Thos. W—, aged three weeks, was seen on February 23rd, 1898, suffering from bilateral ophthalmia, with gonococci. The baby was born at term after a labour lasting 26½ hours, and the "waters burst" certainly twenty hours before the completion of the labour. The right eye was observed to be inflamed as soon as the child came into the world, and the left eye became infected on the tenth day. I have seen a few similar cases.

It is, however, probable that there is another means whereby the eye becomes infected *in utero*—namely, by the passage of gonococci through the intact membranes. The first authentic case of this kind known to me was reported in 1858 by Rivaud-Landrau, of Lyons, and since then cases have been published by Chancon, Strzeminski, and Armaignac. Armaignac's case ('Annales d'Oculistique,' October, 1902) was so well reported as to deserve a word of passing description. An ill-developed infant, weighing only 1786 grammes, was born at the eighth month, after a labour lasting 1½ hours. The membranes were ruptured by the midwife ¾ hour before the expulsion of the fœtus. At birth the eyelids were found to be red and swollen, and on separating them pus escaped from the eyes. A purulent vulvitis was also present. The mother had borne one child 2½ years before, and that child had remained free from ophthalmia. During her second pregnancy, however, the mother had suffered from metritis. One must therefore admit that so-called "con-

genital ophthalmia neonatorum" does occur, although very rarely. Nieden's case ('Klin. Monatsbl. f. Augen.,' October, 1891), where a baby, born in a caul, developed ophthalmia twenty-four hours later, doubtless belongs to this class. Under the above circumstances we must, I suppose, assume the existence of a specific endometritis, with the passage (direct or indirect) of gonococci into the amniotic fluid, although that is a possibility upon which it would be most interesting to hear the expert views of members of the Society. Finally, Dr. Mules ('Essay on Ophthalmia Neonatorum,' 1888) has claimed that during the passage of the fœtal head through the external orifice, specific muco-pus may be introduced directly into the eyes by a mechanical action of the tightly-stretched edge of the perineum. This interesting fact (which Mules has himself seen) need not detain us, inasmuch as for present purposes such cases may well be classed with those where infection occurs shortly after birth.

The recognition of the connection between leucorrhœa in the mother and ophthalmia in the baby certainly dates back to 1750, when Quellmatz ('Centralbl. f. prakt. Augenheilkunde,' February, 1894) insisted upon the point. The fact was mentioned by Goetz in 1791, and by Selle in 1793. It is, however, gratifying to note that to an Englishman, Dr. Benjamin Gibson of Manchester, who wrote in 1807 ('Edinburgh Medical and Surgical Journal,' p. 159), we owe the first clearly reasoned description of the rational means of preventing ophthalmia neonatorum. I cannot refrain from quoting the exact words, which are as follows:—"First, to remove, if possible, the disease in the mother during pregnancy; 2nd, if that cannot be accomplished, to remove artificially as much of the discharge as possible from the vagina at the time of delivery; and 3rd, to pay, at all events, particular attention to the eyes of the child by washing them immediately after delivery with a liquid calculated to remove the offending matter or to prevent its noxious action." A few years after the appearance of this article, Dr. John Vetch ('Practical

Treatise on the Diseases of the Eye,' 1820, p. 242) furnished the experimental proof of the truth of Gibson's deduction by inoculating the urethra with ophthalmic pus, and thereby inducing gonorrhœa within thirty-six hours.

To Credé, however, undoubtedly attaches the credit of having devised the most practical means of preventing ophthalmia neonatorum. This was by the application of a single drop of a 2 per cent. solution of silver nitrate simply dropped into the baby's eyes as soon as possible after birth. Writing in the year 1881, Credé explains that during some seven years before the adoption of his plan no less than 10 per cent., in round numbers, of the 2266 babies born in the Leipzig Maternity Hospital developed ophthalmia. After the systematic use of the silver solution one child only amongst 1160 was attacked,—that is, ·086 per cent. As Dr. J. Watt Black, a former President of the Society, has justly said, when discussing this question a few years ago, "Except the introduction of vaccination by Jenner, nothing greater has ever been done for the prevention of blindness in children" ('Obstetrical Transactions,' vol. xxv, 1894), a sentiment with which I am in complete accord.

Credé's epoch-making experiences have been repeated, extended, and confirmed in every quarter of the civilised world. Medical literature contains many striking testimonies to the success of his plan. Thus in 1895 a most instructive paper on the value of the method was published by Dr. R. Köstlin, of Halle ('Archiv f. Gynäkologie,' 1895, Zweites Heft, p. 257). Köstlin showed that prior to the introduction of the method the amount of ophthalmia ranged from 3 per cent. to 50 per cent. in the practice of thirty-eight observers, and averaged 9·24 per cent. in the returns from thirteen observers who gave the necessary figures. After the employment of Credé's plan amongst 24,724 babies, the percentage of ophthalmia sank to 0·665. Could any figures be more conclusive as to the value of the method?

Many attempts have been made to replace silver nitrate

by other agents, antiseptic and otherwise. The long list includes carbolic acid, sublimate, sterile water, iodoform, protargol, aniodol, iodine trichloride, to name only a few of the number. Each and all of the foregoing agents, with the possible exception of corrosive sublimate and protargol, have proved themselves inferior to the 2 per cent. silver recommended by Credé. A glance at the following figures, modified from Köstlin's tables by Dr. Lucien Howe ('American Journal of Ophthalmology,' xiv, 1897, p. 232) and myself, will render this obvious :

Agent.	Births.	Ophthalmia.
1. Silver nitrate, 1 per cent. . .	1223	2·4
2. Carbolic acid solutions . .	1623	7·7
3. Sublimate, 1 per cent. . .	965	0·6
4. Sterile water	5823	3·12
5. Iodine trichloride solutions .	701	1·2
6. Protargol, 20 per cent. . .	2100	0·28
7. Aniodol, 1 in 4000 . . .	940	0·74

Although objections have been raised to anything like a general adoption of Credé's method, yet these have usually been of so vague a character that it is impossible to examine them seriously, let alone to refute them. On the other hand, of 110 medical men who replied to a circular letter on ophthalmia neonatorum issued by Professor Hermann Cohn, of Breslau, in 1896, fifteen only were opposed to the general introduction of the Credé method ('Ueber Verbreitung u. Verhütung der Augeneiterung der Neugeborenen,' Berlin, 1896). Of the dissentients, one alone (Dr. Wilbrand, of Hamburg) was able to bring forward any definite objection in the shape of consecutive corneal opacities.

Nevertheless a few tangible objections have been mentioned by various writers. They are three in number, viz. (1) conjunctival catarrh, (2) conjunctival hæmorrhage, and (3) corneal opacities or ulcerations. It will not be a waste of time to examine these points one by one.

(1) That the use of 2 per cent. solution of silver nitrate

is often, perhaps always, followed by a discharge from the eyes, and in rarer instances by a certain amount of hyperæmia, will be disputed by nobody who has had practical experience of the method. Cramer's observations ('Centralbl. f. Gynäkologie,' 1899) bear out this statement. He found an appreciable reaction in no less than 96 per cent. of his hundred cases. This, he thinks, is closely connected with the development of the baby, and to some extent upon the mode of birth. Cramer believes that in a large number of instances the silver sets up inflammation of the conjunctiva and entails incurable sequelæ. It must, however, be pointed out that Cramer did not adhere strictly to Credé's method, but, in order to secure a full distribution of the solution, opened and closed the baby's eyelids with his forefinger a number of times. This makes it possible that traumatism had something to do with his bad results.

In order to ascertain the facts, Drs. Brehaut and Worthington, of Queen Charlotte's Hospital, have recently, at my suggestion, made a series of observations upon babies in whom Credé's method had been employed shortly after birth. The results were as follows:—Between January 5th and January 21st, 1903, fifty consecutive babies were closely observed, and in all, except possibly one, there was some reaction after the use of the silver drops. This took the form of a watery mucous discharge from the eyes, unaccompanied by any appreciable redness of the ocular or palpebral conjunctiva. In a few instances discharge from the eyes was noted within one hour of the application, but usually it was not observed until three hours had elapsed. It persisted from four hours to 2½ days.

Zweifel ('Centralbl. f. Gynäkologie,' 1900, No. 51) has lately conducted some suggestive experiments to ascertain the cause of the catarrh that so frequently follows Credé's method. In 816 newly-born babies that observer washed one eye with distilled water before applying the silver, while, after the silver had been applied, he irrigated the

other eye with a dilute solution of sodium chloride. Zweifel found that catarrh developed in the first, but not in the second case. He therefore thinks that catarrh may be due to the absence of the saline tears from the newly-born child, and, logically enough on this view, advises that the silver employed in the Credé plan should be afterwards neutralised by means of a solution of salt.*

So far as I can gather, there is no evidence to show that the application of 2 per cent. silver can cause an actual inflammation of the conjunctiva. *Post hoc* is not always *propter hoc.* At most, it may predispose to such inflammation by reducing the resisting powers of the parts, so that common micro-organisms, usually non-pathogenic as regards the conjunctiva, may assume infective powers. This view is borne out by the undoubted fact that in many mild catarrhs of newly-born babies where the silver has been used, nothing can be found in the conjunctival secretion beyond the *S. p. albus* and the ubiquitous xerosis bacillus, which some authorities think to be normal or almost normal inhabitants of many healthy eyes.

(2) It is a rather curious coincidence that several cases have been reported where persistent bleeding from the conjunctiva has followed the use of silver drops. For example, A. J. Abbe ('Annals of Ophthalmology,' 1899, p. 10) mentions such a case in a baby born at term, but weighing only 5 lbs. Some twelve hours after birth, owing to existence of discharge from one eye, a drop of a 6 per cent. solution of silver nitrate was used, but "before this was done," to quote the author's words, "the lid of the right eye had begun to look red and swollen." Shortly after the application, blood commenced to trickle from one eye, and this was soon followed by bleeding from the other eye. Despite treatment, the baby succumbed about two days after the bleeding was first noticed. In de Schweinitz's case ('Medical Record,' April 18th,

* Experiments are now being undertaken at Queen Charlotte's Hospital in order to control Zweifel's results (August, 1903).

1891) a 2 per cent., and then three hours later a 4 per cent. silver solution was applied to the eyes. Twelve hours afterwards, bleeding from the conjunctiva set in, and persisted for about two days. The baby recovered. With regard to the cases mentioned, it is clear that in neither can the hæmorrhage be charged against Credé's method, in which a single drop of a 2 per cent. solution is used.

In a case recorded by Pomeroy ('New York Medical Record,' August 20th, 1897) Credé's method appears to have been adopted one day after birth, and was followed by a slow oozing of blood from the conjunctiva. The baby died. In this connection it may be noted that bleeding from the conjunctiva has been seen by several authors in babies suffering or convalescent from ophthalmia neonatorum. Hansell ('Ophthalmic Record,' February, 1901) described such a case in a child born at the seventh month and weighing 3 lbs. 3½ oz. Nettleship ('Diseases of the Eye,' 1897) met with a similar condition. Oetlinger (Michel's 'Jahresbericht,' 1900, p. 498) mentions the case of an undersized baby in whom, on the thirteenth day after birth, bleeding occurred from the conjunctiva of one eye, and was followed next day by hæmorrhage from the skin. Death took place in six days, and the autopsy revealed hæmorrhages into internal organs.

Indeed, it may fairly be asked whether there is any causal connection between the use of silver drops, on the one hand, and conjunctival bleeding, on the other. In trying to decide this question we must remember that many newly-born children are predisposed to hæmorrhage, as witness those not altogether uncommon conditions epistaxis, cephalhæmatoma, sterno-mastoid ecchymosis, melæna neonatorum, omphalorrhagia, and visceral hæmorrhages. In some babies, again, aside from any definite anatomical lesion, there is a great tendency to spontaneous bleeding. Although rare, this so-called "idiopathic hæmorrhage" (which appears to be distinct from hæmophilia) is well known to those who have much to do with very young children. It has been estimated that death

occurs in 60 per cent. of the cases, and the condition in some instances is almost certainly connected with congenital syphilis. Cases of this kind may have been recorded where hæmorrhage occurred from the conjunctiva apart from any use of silver drops. Thus, Koudiche ('Revue générale d'Ophtalmologie,' 1898, p. 35) reported such a case in a baby one day old which proved fatal. It is quite likely that Pomeroy's case (the only one in question) belonged in reality to that class.

(3) It is alleged that corneal opacities may follow the use of the Credé method. Few of the recorded observations with regard to this point will bear any critical examination. Wilbrand's two cases have been mentioned before, but in neither could it be ascertained, despite Professor Cohn's careful inquiries into the facts, (*a*) how the method was carried out, nor (*b*) the actual strength of the solution employed. I must leave you to judge what credence must be attached to loose statements of this kind. Van de Bergh ('Presse Médicale Belge,' October 13th, 1895) reports a case where the energetic use of sublimate and afterwards of 2 per cent. nitrate of silver was followed within twenty-four hours by an opacity of one cornea. Credé, however, never recommended so drastic a measure of prophylaxis. Romiée ('Le Scalpel,' February 2nd, 1896) quotes cases where a fibrinous conjunctivitis and corneal opacities followed the employment of the Credé method, but his statements are open to a similar kind of criticism.

Against these inconclusive statements we may put the fact that amongst 30,000 babies treated by Credé's method by Dr. W. Leopold ('Berl. klin. Woch.,' No. 33, 1892) an unfavourable reaction was never observed. The same remark applies to the 24,723 babies tabulated by Dr. R. Köstlin. It may be taken for certain, as Dr. Lucien Howe has shrewdly pointed out, that if a bad result could be traced to the Credé method, the fact would be accorded a wide publicity.

Two other objections have been raised to anything like

the general adoption of the Credé method: (1) that it is too complicated to be entrusted to the average midwife; and (2) that it does not always prevent the development of ophthalmia.

(1) That the ordinary midwife is too unintelligent to apply the method correctly can scarcely be admitted as a serious argument. She is often compelled, for instance, to undertake things that require at least as much intelligence as applying a drop of liquid to a baby's eyes, such as tying the cord, or giving a vaginal douche. Michaelsen's case ('Centralblatt f. p. Augenheilkunde,' 1900, p. 63), where a midwife, having run out of the 2 per cent. solution, hastily sent to the nearest chemist and obtained a solution of 20 per cent. silver, which she dropped into the eyes of two babies, with consequences which may be better imagined than described, must surely constitute a unique instance of carelessness on the part either of the chemist or the nurse. It is, however, no argument against Credé's method Nevertheless, stress has been laid upon this objection by several writers.

(2) Does Credé's method always prevent the development of ophthalmia neonatorum? The answer to this question must be in the negative. In response to Cohn's oft-quoted circular, replies were received from thirteen medical men, who had met with no fewer than 36 cases of blennorrhœa amongst 310 births,—that is to say, in 12 per cent. This seems a startling result, but a moment's reflection will show us that the percentage ought to be calculated not from the results of thirteen returns only, but from the whole number replying to the circular. Then there remains the fundamental fact—namely, that amongst the 24,723 babies included in Köstlin's lists, where the Credé plan had been used, only 0·65 per cent. developed ophthalmia; indeed, it is clear that the correct use of the silver drops should prevent ophthalmia when the eyes have been inoculated with specific secretions either just before or just after birth. On the other hand, it obviously cannot prevent ante-partum infec-

tion, which I admit to be rare, or secondary inoculation, which I know to be common; hence the method may be expected to fail in a certain small percentage of cases, even when correctly applied, and that has been shown to be so by Köstlin's figures.

To sum up the whole matter, the sole disadvantage of the Credé method, according to my view, is the production of a more or less trivial catarrh of the conjunctiva; and, after all, what is that compared with the risks of being blinded by ophthalmia?

The Obstetrical Society of London acted well and wisely when it caused to be inserted in its midwives' certificate a paragraph touching the disinfection of babies' eyes with a 1 in 4000 solution of corrosive sublimate. The question now is whether, with all the evidence before it, the Society might not be induced to accord a formal approval of Credé's plan and to recommend it for general adoption. That recommendation, coming from such a body, would go far to strengthen the hands of those who for years have been trying to get the plan universally adopted. It would, moreover, have an immense influence in still further reducing the ravages of ophthalmia neonatorum.

Dr. Herman said that Mr. Stephenson's paper was a very important one, and it was to be hoped that it would do great good in extending among the profession the knowledge of how to prevent ophthalmia neonatorum. The mass of evidence collected by Mr. Stephenson clearly showed the superiority of the 2 per cent. solution of nitrate of silver originally recommended by Credé to every substitute that had as yet been tried. At the General Lying-in Hospital some years ago several cases of ophthalmia neonatorum occurred, in spite of the routine instillation of corrosive sublimate solution. The nitrate of silver 2 per cent. solution was then used instead of sublimate solution, as recommended by Credé, and cases of ophthalmia at once ceased to occur. He had published this bit of experience in the 'Lancet' at the time. He found much difficulty in advising students what to do. The objection to Credé's method was that it always produced some conjunctivitis. This was really only a trifle, but from a mother's point of view it was a great thing; and a young practitioner who should give people occasion to say of him that he always did something to newly born children which

inflamed their eyes, would be much handicapped in practice; and he could not explain to his patients that he did it lest the eyes should be infected with gonorrhœa. He thought that the best thing to teach was that the practitioner should inquire into the presence or not of vaginal discharge, and if there was discharge, or any history or symptoms suggesting the possible presence of the gonococcus, he should use nitrate of silver; but if there was no suspicion of gonorrhœa he should be content to use 1 in 2000 sublimate solution, which, as Dr. Stephenson had shown, was a very efficient germicide, although not so powerful as the 2 per cent. nitrate of silver solution. Dr. Stephenson's careful analysis of the cases in which Credé's method was said to have done harm, showed how hollow all the graver objections were which had been raised against it.

Dr. Walter Swayne said that he wished to emphasise Dr. Herman's point about the young practitioner. Having the supervision of a maternity charity in which, as in all the London hospitals with medical schools attached, the work was carried on by students, he felt certain that the work would fall off if it was found that the use of Credé's method, although it was universally acknowledged to be the best, gave the public an opportunity for saying that the babies got sore eyes in consequence. On this account in the maternity department a weak solution of corrosive sublimate was used instead of nitrate of silver. He also thought it would be interesting to hear the experiences of others in large provincial towns. In his own locality the customs and habits of the mining population led to the pregnant women being very liable to gonorrhœal infection, and consequently a large incidence of gonorrhœal ophthalmia would be expected. In his experience, however, and in spite of this, the actual number of cases of true gonorrhœal ophthalmia as evidenced by microscopical examination and bacteriological cultivation was small.

Mr. Treacher Collins pointed out that one circumstance which rendered new-born children liable to ophthalmia was that they secreted no tears. If an irritant was introduced into the conjunctiva of any but an infant's eye, there was at once a gush of tears which mechanically tended to wash it away. The tears, moreover, had been shown to have a bactericidal action. It was to supply new-born infants with these means of defence, which were developed later in life, to which their endeavours should be directed. If the conjunctiva immediately after birth were simply washed with water, it had been shown that the number of cases of ophthalmia was reduced; but if a sufficiently powerful bactericidal fluid were used they could almost entirely be done away with. It was satisfactory to know that the amount of ophthalmia neonatorum was decreasing. In 1885 the number of cases coming to Moorfields Hospital was about 1 to every 200 patients; now it was about 1 to 400. Blindness was also

decreasing; the last census had shown that, though the population of London had largely increased, the number of blind people had decreased. When a case of ophthalmia neonatorum came under his care, he was in the habit of asking if the mother had been attended by a doctor or a midwife. He was sorry to say that he found nearly half the cases had been attended by medical men. This, he thought, showed that the profession generally did not yet realise the great value of employing prophylactic measures against this disease. Ophthalmia neonatorum was not only preventable, but might be cured without loss of sight if dealt with sufficiently early and skilfully treated. Obviously midwives could not be trusted to undertake such treatment. Unfortunately he often found that valuable time was lost by mothers using lotions suggested by them. He asked if it would not be possible for the Midwives Board, now drawing up rules for midwives, to make it compulsory for them to call in a medical man to a case occurring in their practice, or to notify it to the medical officer of health for the district.

Dr. W. S. A. Griffith wished to thank Dr. Stephenson for his valuable paper, and hoped that it would convince the Council of the Society of the need for revising their directions to midwives in regard to this matter. His experience at Queen Charlotte's had convinced him, even before he had the advantage of Mr. Stephenson as a colleague and Dr. Sikes in the pathological laboratory, of the undoubted superiority of the silver nitrate, and he regarded the very small percentage of imperfect results not as failures of the method, but as failures in carrying it out; and this is not to be wondered at when we realise the difficulties of disinfection of a little baby's eyelids in comparison with the same process in an adult. At the same time in his own practice he did not use it as a routine procedure in private, being satisfied to use it in all cases in which he suspected gonorrhœal infection; and for the rest he was satisfied to thoroughly cleanse the eyelids, nose, and lips with an ample wash with mercuric iodide 1 in 1000 as soon as the head was born, and before the child opened its eyes or attempted to breathe; and he had no reason to be dissatisfied with the results. Dilute mercury solutions 1 in 2000 to 1 in 4000 or less were utterly unreliable. Boracic solutions were little better than plain water.

Dr. C. J. Cullingworth expressed the pleasure with which he had listened to the paper. The time had come when it was highly desirable that the subject should be again brought before the Society and the profession. In advocating legislation for improving the training and controlling the practice of midwives, he had always regarded the prevalence of blindness due to preventable causes as one of the strongest and most telling arguments; and he had frequently made use of it, but in doing so he had

found himself seriously hampered by having to fall back upon the statistics of nearly twenty years ago. The present paper furnished fresh statistics, not a whit less startling and convincing than those collected and published by the Ophthalmological Society in 1884, and would be extremely useful even from that point of view alone. With regard to the modes of infection enumerated by the author, no doubt, as he himself had said, the ordinary source of infection was the presence of gonorrhœal secretion in the vagina of the mother at the time of parturition; but this was not the only source. He (the speaker) remembered being present many years ago at a Cæsarean operation, resulting in the birth of a living child which in the course of a day or two presented all the symptoms of acute purulent ophthalmia. He was not sure that he could quote chapter and verse for the statement, for he was uncertain whether the case had been published. It was a matter about which, however, he was not likely to be mistaken, as it created much interest at the time from being so contrary to all that was then believed and known on the subject. In that case it was manifest that whatever the source of infection, it was not the secretions of the maternal passages. The question of preventive measures interested him (Dr. Cullingworth) more particularly on account of his happening to be a member of the Central Midwives Board, the body which had been entrusted under the new Midwives Act with the duty of formulating rules and regulations for the training and practice of midwives in this country. The rules which had been drawn up were now in the hands of the Privy Council, and had not yet assumed their final shape. It was therefore impossible to say whether when they came to be published they would be found to contain a satisfactory injunction with regard to the disinfection of the child's eyes or not. For his own part he sincerely hoped they would. He had not been aware until quite recently of the great divergence of opinion that existed in the medical profession as to the need for and wisdom of such a measure. He trusted that the paper just read would do much to remove this divergence. With regard to the particular solution to be recommended, he was glad that the author, whilst upholding the silver nitrate solution as the best, spoke highly of the efficiency of the solution of corrosive sublimate, which undoubtedly for ordinary use had certain advantages. It was important, for example, not to render it compulsory for a midwife to carry more than one kind of antiseptic. To make her carry several kinds not only tended to still further overburden her already overburdened bag, but was also in danger of confusing her mind. If it was desired that the use of antiseptics in midwifery should become general, the instructions for their use must not be too complicated. It was all very well in hospitals, where the solutions are all in readiness

and supervision is constant. There, by all means let the ideally best method be carried out. But let them imagine, on the other hand, the district midwife in a remote country place, where her loyal efforts to carry out in full detail the methods in which she has been trained are not seldom ridiculed instead of being encouraged by the neighbouring practitioner upon whom she is dependent for help in her difficulties. Let them imagine what would be said if, in addition to the ordinary basins of antiseptic solution (themselves far too frequently an object of contempt and ridicule), she produced a little phial of silver nitrate eye drops. The contempt and ridicule would know no bounds, and there would be a fear lest the poor woman should in her bewilderment and despair give up all attempts at antiseptics. For these reasons, amongst others, he thought that for general use in the homes of patients the solution of corrosive sublimate, though it might not be ideally the best, was the most suitable. In the rules about to be issued by the Central Midwives Board, although the use of antiseptics is repeatedly enjoined, it had been thought undesirable to go into details as to the kind and strength of the antiseptic to be used; for all such details would require to be modified as knowledge advanced, and it would be inconvenient to have them embodied in rules, which, when approved by the Privy Council, will have the effect of law and will be difficult to alter. Might he mention, by way of illustration, the solution of the biniodide of mercury to which several speakers had alluded? He was informed by competent chemists that the efficiency of solutions of the salts of mercury depends upon their ionization, and that ionization only occurs satisfactorily in simple watery solutions of this mercurial salt. If another salt is present, ionization is interfered with. Now it was well known that iodide of mercury is almost insoluble in plain water, but is freely soluble in a solution of potassium iodide, with which it is almost invariably combined. Hence it is doubted by chemists whether the ordinary solution of the biniodide of mercury, not being a simple aqueous solution, has any antiseptic value. He was not himself enough of a chemist to speak with any authority on the subject; and probably the matter would be decided rather upon the results of clinical and bacteriological experiment than upon chemical theory. Meantime, he had merely given this as an instance of the manner in which accepted methods may be called in question, and may have to be modified or cast aside in the light of fresh knowledge.

Dr. Amand Routh was impressed by the strength of the advice that the Obstetrical Society should change their recommendation as regards the routine use of corrosive sublimate solution for the eyes of the new-born, and should adopt in its place a 2 per cent. solution of nitrate of silver. The difficulties of such a routine use had been fully stated. He had been

surprised to hear from Dr. Griffith, who strongly advocated the change suggested by Mr. Stephenson, that whilst he wished all midwives to adopt this course he did not find it advisable to do so himself, and this made his advice somewhat unpractical. If the nitrate of silver was only to be used in special cases, it was at once obvious that the special cases would have to be very clearly defined, and that was where the difficulty would be in any half-and-half measures. The difficulty of preparing and of keeping the solution always fresh would militate against its routine use, and these were among the points which led the Council of the Society hitherto to advise the corrosive sublimate solution, which was always at hand and very easily prepared. Dr. Routh then read the rules of the Society bearing on the subject, and also those making it imperative that midwives should at once send for a doctor should the eyes show any symptoms of inflammation. He asked if in the recorded cases of congenital (intra-uterine infection) gonorrhœal ophthalmia, infection of other mucous membranes had been observed, and also whether changes in the liquor amnion had been noticed.

Dr. Peter Horrocks said that up to five years ago, when he was seeing out-patients in the gynæcological department at Guy's Hospital, he used to send specimens to the bacteriological department. He did not remember to have been assisted in the diagnosis of gonorrhœa in a single instance. Pus was taken from the urethra, the vagina, and the cervix uteri. In cases of undoubted gonorrhœa, often enough the report was negative, and no gonococci could be found. When gonococci were found it was only when the case was clearly gonorrhœa, and where there was no difficulty at all in the diagnosis. In cases of chronic vaginitis, where it would have been a real help, the bacteriologists could find no gonococci. They used to say that enough pus was not sent; they wanted a teaspoonful! He did not know whether improvements had been made during the last five years, so that it was now a much easier matter to detect the gonococcus; or whether, whilst still difficult in regard to vaginal gonorrhœa, it was easy in gonorrhœal ophthalmia. It certainly was a thing to be desired, and he often wished it was as easy to test secretions for gonorrhœa as it was to find out whether they were alkaline or acid by means of litmus-paper; because, obviously, if one could tell easily in any given case whether a woman was suffering from a gonorrhœal vaginitis, or a child from a gonorrhœal ophthalmia, then suitable treatment could be carried out in these cases, whilst healthy women and children could be left alone. The author of the paper had stated that 10 per cent. of children suffered from ophthalmia. He thought this was too high a percentage, particularly in places where modern aseptic midwifery was practised. But even if it were so high, that would leave 90 per cent. of children who did not suffer from ophthalmia. Obviously, when

routine measures of dropping germicidal solutions into the eyes of every newly born child were adopted, they did no good at all in 90 per cent. of cases. If it could be shown conclusively that they did no harm, he should join in advocating these routine prophylactic measures. But he did not think it had been proved that no harm was ever done by this routine treatment, and therefore one had to consider whether 90 per cent. of children should be put to some risk for the sake of benefit to the other 10 per cent. Again, supposing prophylactic measures were not used, and a child showed signs of commencing ophthalmia, would it not be an easy matter to treat it successfully by starting the application of these germicidal remedies? One speaker had alluded to the reduction in the number of cases of ophthalmia neonatorum at Moorfields Eye Hospital since the routine method of using germicidal solutions to the eyes of newly born children. But was not this diminution due, in part at all events, to the aseptic methods of the nurse and doctor at the confinement? Look at the routine method of vaginal syringing in labour. At one time it was thought to be absolutely necessary in order to prevent puerperal sepsis, whereas it had been shown to be unnecessary in healthy women and in normal confinements; and, indeed, it was a positive danger. In his own lying-in ward at Guy's Hospital he did not allow routine syringing in normal cases, and no one could have better results in regard to the normal puerperium. He could not help feeling glad that he had not been born in 1903 at Queen Charlotte's Hospital. He was born in pre-aseptic days, and no solutions were dropped into his eyes, and he certainly had never suffered from ophthalmia. He did not see why a selection should not be made, and only those children treated where there was a suspicion of gonorrhœa in the mother or of a commencing ophthalmia in the child. This would save at least 90 per cent., probably considerably more, from any such treatment. He thought that not only experts like obstetricians but also the rank and file of the profession, could tell with great accuracy whether a woman was healthy or not. Very few mistakes would be made, and even if a gonorrhœa were latent, and only showed itself by ophthalmia beginning in the child, such a case would be extremely rare, and could be at once treated, and in all probability effectually cured.

Dr. Robert Boxall considered that strong reasons exist for the adoption of routine measures for the prevention of ophthalmia neonatorum, and more particularly in the practice of students and midwives. Mention has been made of 10 per cent. as representing the incidence of the disease when no prophylactic measures are taken. But even were it 3 per cent., or even less, he saw good grounds for adopting a routine practice of prevention. For, in the first place, the disease, when allowed to become established, is so difficult to cure and so disastrous in its consequences, that preventive rather than curative measures

are demanded. And seeing that in the hands of the experienced practitioner it is difficult, and in many cases impossible, to decide at the time of delivery in what particular cases the source of infection may be lurking in the vagina, in the hands of midwives, who cannot be expected to form an opinion as to the existence of latent gonorrhœa, routine measures are absolutely necessary. Among these, he desired to draw attention to the distinct advantage in the prevention of ophthalmia which he had noted years ago at the General Lying-in Hospital following the routine use of sublimate vaginal douches before delivery, at a time when no systematic antiseptic treatment of the infants' eyes was carried out. At the present time, as a routine practice, the infants' eyes are freely flushed with 1 in 4000 sublimate solution at the time of delivery, which probably brings to bear on the conjunctival surfaces about the same amount of antiseptic as 1 minim of 1 in 100 solution dropped directly into the eye, and has the additional advantage of mechanically washing away any discharge which may have found lodgment between the eyelids.

Dr. A. W. Sikes said that he thoroughly agreed with Dr. Boxall as to the necessity for the routine treatment of children's eyes in hospitals, and by midwives. In lying-in hospitals, as Queen Charlotte's, there was no difficulty in the carrying out of the method; but of course there were the difficulties mentioned as to the employment of the silver nitrate method by midwives at the homes of patients. He thought that with hospital patients it was absolutely necessary to have a routine treatment, as it was impossible to tell whether the mothers had not at some time been infected; and it was quite possible that the gonococci might be present even though the discharge has ceased, and under these circumstances one could not pick out those cases which ought and which ought not to be treated with antiseptics. Statistics as quoted by Dr. Stephenson undoubtedly showed that the best results were to be obtained with $AgNO_3$, and surely we ought, as a Society, to recommend what gave the best results; the only point, Dr. Sikes thought, was the strength of the $AgNO_3$ which ought to be used. With regard to the difficulty mentioned by two of the previous speakers, that $AgNO_3$ solution would not keep for any time, Dr. Sikes did not agree with this. He said that he knew from experience that it would keep much longer than was generally supposed if care were taken to keep it in well-stoppered bottles of coloured glass; he did not see why there should be any difficulty in getting midwives to carry with them a small bottle of $AgNO_3$. The reaction of the eyes to $AgNO_3$ was a difficulty to those not accustomed to its use, as it varied roughly between three and thirty-six hours; but we ought to try to introduce, at least amongst hospital patients, that which gave the best results. One point, the difficulty of which he thought has been very much over-estimated by one at least of the previous

speakers, was the detection of the gonococcus. Dr. Horrocks had said that he had been told that it was necessary to send about a teaspoonful of the pus for the detection of the organism. Dr. Sykes said he had examined a great many cases of pus from the vagina, and from the eyes, at Queen Charlotte's Hospital, and had come to the same conclusion which many others had come to, that it was really a very easy matter. The gonococcus was very readily stained, had a very characteristic appearance and grouping in the cells; and even without using Gram's method, or attempting cultivations, one could tell from the appearance alone to within, say, 99 per cent. of certainty. One point of interest in connection with the examination of the conjunctiva for organisms was mentioned by Dr Eyre in his paper on "A Contribution to the Bacteriology of the Normal Conjunctival Sac;" that is, that the lower sac was more likely to contain organisms than the upper, so that it is better to examine the lower sac in suspected cases. In the same paper Dr. Eyre mentioned results he had obtained showing the inhibitory action of the lachrymal secretion on the growth of bacteria. With regard to the examination for gonococci in the vagina, Dr. Sykes mentioned that his experience was that the most certain way of finding the organism was by taking a scraping with the wire loop directly from the cervix, using a Fergusson's speculum to get a clear view. Many cases clinically gonococcal are missed because the cover-slip preparation is so often made from the pus about the entrance to the vagina. The presence of sarcinæ, mentioned in the statistics from Queen Charlotte's Hospital in Dr. Stephenson's paper, were probably due to the proximity of the hospital to a brewery; they were more often found in the latter months of the summer; they were, of course, quite innocuous. Dr. Sykes insisted on the early bacteriological examination of all sore eyes in newly born children, and also of any vaginal discharge in the mother; so that, if gonococci were found, even greater care might be taken so as to prevent the cases arising by infection from the mother after birth.

Mr. Sydney Stephenson, in reply, said it was significant that, notwithstanding the various opinions expressed, no single instance had been brought forward during the discussion where bad results had followed the adoption of Credé's method. He was convinced that it was the best available plan of prophylaxis, and he appealed to the Society to recommend it for general adoption. In that way the profession, and ultimately the public, might be reached. In reply to Dr. Routh, Mr. Stephenson stated that a purulent vulvitis was present in Armaignac's case of intra-uterine infection of the eyes. In two cases of his own there had been a simultaneous otorrhœa, but gonococci could not be demonstrated in the discharge from the ear. Mr. Stephenson trusted that Dr. Horrocks' case of ophthalmia in a

baby delivered by Cæsarean section might be published in full, since it testified to the possibility of an intra-uterine infection of the eyes. He agreed with Mr. E. T. Collins's suggestion with regard to the notification of ophthalmia neonatorum, as carried out in certain countries. As to the prophylactic use of corrosive sublimate, mentioned by several speakers, Mr. Stephenson said that the results so far obtained with a 1 per 1000 solution (as with a 20 per cent. solution of protargol) were excellent, but the figures available were not yet large enough to allow one to recommend its general adoption. Besides, by some observers sublimate was thought to be detrimental to the corneæ of babies. In Mr. Stephenson's experience, a 2 per cent. solution of silver nitrate kept well enough, provided it was placed in an amber-coloured bottle and kept away from the light.

OCTOBER 7TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—46 Fellows and 1 visitor.

Books were presented by the College of Physicians of Philadelphia, and the Government Maternity Hospital, Madras.

William Nolan, L.R.C.P. & S.I., L.M.Dubl., was admitted a Fellow of the Society.

Nathaniel H. Turner, L.R.C.P. (Birmingham), was declared admitted.

The following gentlemen were proposed for election:—A. M. Rose, M.B., Ch.B., D.P.H.Aber.; Percival G. A. Bott, M.R.C.S., L.R.C.P.; Arthur Holbrook Nott, M.B.Durh., Major I.M.S.

The following candidates were elected Fellows of the Society:—Samuel James Murdoch Cameron, M.B., Ch.B. Glasgow; Ethel May Vaughan, M.D., B.S.Lond.

A CASE OF ABDOMINAL PREGNANCY SECONDARY TO PARTIAL RUPTURE OF TUBAL GESTATION SAC; ABDOMINAL SECTION FIFTEEN MONTHS AFTER CONCEPTION AND EIGHT MONTHS AFTER DEATH OF FŒTUS.

By John Benjamin Hellier, M.D.

Summary.—This patient had seven months' amenorrhœa with signs of pregnancy, and was confined to bed with pain and symptoms attributed to "inflammation." The pain subsided and health improved, and menstruation recommenced and became excessive. Eight months later a dead fœtus was removed by abdominal section from the peritoneal cavity, together with a tumour which arose from the right oviduct and contained the placenta. The fœtus was closely covered by an amniotic sac, which was connected with the tubal tumour. Recovery without complications. (Fœtus and tubal tumour shown.)

History.—B. D—, married, aged 30, was admitted into the Leeds Infirmary on September 10th, 1903, for abdominal tumour. She stated that her father died of phthisis and her mother of cancer of the breast. She herself has enjoyed good health till present illness. She has had one child (stillborn) eight years ago, a living child six years ago, and another five years ago. After this she had no pregnancy till fifteen months before admission. Then she ceased to menstruate, and had signs of pregnancy. She suffered much from vomiting, and had severe abdominal pain. She says that she was confined to bed for three months, and was supposed to have inflammation, the body being swollen and the pain severe. Subsequently the pain subsided, the abdomen was less swollen, and menstruation recommenced after seven months' amenorrhœa. She was now able to get up and felt well, but sought advice for menorrhagia.

On admission she was found to be in good condition, with florid complexion and healthy aspect. Heart, lungs and kidneys normal.

Abdominal examination.—Walls fairly thick; abdomen somewhat prominent, especially on left side. On palpation a somewhat hard and irregular swelling was felt reaching from the pelvis to the level of a point halfway from the umbilicus to the ensiform cartilage. It lay mostly to the left of the median line above, but occupied a more central position below. There was a small hard nodule at the navel. The upper part of the tumour seemed to be to some degree differentiated from the pelvic part, and to be harder. Tumour somewhat mobile, but lower part more fixed. Dulness over tumour; flanks resonant. No tenderness on pressure or pain on manipulation.

On *vaginal examination* the cervix appeared to be of normal consistence, and not unduly patulous. In the anterior fornix a rounded tumour could be felt lying in front of the uterus, and continuous with the pelvic portion of the abdominal tumour. It was soft and somewhat elastic to the touch.

Operation (September 12th).—The patient was anæsthetised with ether. On exploring the abdomen by a median incision a dead extra-uterine fœtus was exposed directly the peritoneum was opened. It lay with the head above and the back behind; the knees were flexed on the thighs, and the thighs on the abdomen. The nodule which had been felt at the navel was the right knee. The fœtus was compressed by a closely fitting membranous capsule, which seems to be the amnion. There was no liquor amnii. The arms were bound down to the sides, as will be seen in the specimen shown. The sac had adhesions externally to the mesentery and omentum. The adhesions were separated without difficulty, some being ligatured and a portion of the omentum being removed. On drawing the fœtus out by the upper end the legs became extended, the amniotic sac giving way around the waist.

It was then found that the right foot was attached to a pelvic tumour which lay in the utero-vesical pouch and on the right side. This was enucleated with no great difficulty, some adhesions being broken down and some tied. These last included some processes of the broad ligament. The fundus uteri appeared to be normal. There was not much bleeding, but there was some general oozing from the site of some of the pelvic adhesions. A glass drainage-tube was left in the pouch of Douglas. The abdominal wound was closed with continuous catgut suture of peritoneal edges, and interrupted silkworm-gut sutures through the skin and muscle, a few interrupted catgut sutures being used to make the edges of the aponeurosis meet accurately.

There was not the least suggestion of any septic processes in the abdomen or in the parts removed. The fœtal tissues seemed rather brittle. The fœtus was removed with the pelvic tumour hanging to its foot, and this tumour contained the placenta.

After-history.—The patient made a rapid recovery without complications. No vomiting after operation. No morphia needed. Tube removed fourth day. Union by first intention. The temperature was practically normal from the third day onwards.

The patient was sent to convalescent home on October 3rd.

Description of parts removed.—The fœtus is a male with well-formed genitals. Weight, 2 lbs. 7 oz.; length, 12½ inches. It corresponds to about twenty-five to twenty-eight weeks' development. It is free from deformity. It had been dead for several months. It is enveloped as far as the waist in a membranous sac, which fits closely over head, trunk, and arms, binding the arms down to the sides. There is no liquor amnii. The sac, which appears to be the amnion, can be easily reflected from the fœtal skin. The legs are now extended, and the front of the abdomen and thighs are not covered by amnion, and the skin here is redder and softer than the part immediately beneath the amnion. On flexing the legs and thighs the

continuity of the amniotic sac is restored, and it is seen to be continued over the buttocks and the rest of the fœtus. A small stump of umbilical cord hangs from the umbilicus. The cord was torn when the fœtus was being extracted.

The pelvic tumour is a distended oviduct, and is about the size of a closed fist. The fimbriated extremity and two or three inches of the oviduct are plainly seen in the upper and inner part of the tumour. The right foot of the fœtus is embedded in the upper side of this tumour, but by a slight dissection it is easily seen that the foot has an amniotic investment, and that with a little force it could be drawn out and separated. The continuation of the umbilical cord enters the tumour near this foot, a probe passes two or three inches along the oviduct, and then enters the substance of the tubal sac.

On section there is a well-marked capsule, with which the amnion is blended above. The section is uniform, reddish in colour, fibrous and somewhat granular-looking in appearance. The contents of this tubal sac seem to be the placenta in an altered and degenerated state.

A microscopic section shows fibrous tissue, with remnants of chorionic villi and some calcareous particles.

Report of the Pathology Committee on Dr. Hellier's Specimen of Extra-uterine Gestation.

The placenta is contained within a sac which on naked-eye and microscopic evidence is made up partly of the ampullar end of the tube, but mainly of new fibrous tissue. We regard the specimen as an example of tubo-abdominal pregnancy.

(Signed) G. F. Blacker.
J. S. Fairbairn.
Corrie Keep.
Cuthbert Lockyer.
J. H. Targett.
Herbert R. Spencer.
Alban Doran, *Chairman.*

December 30th, 1903.

FIBRO-MYOMA OF OVARY.

Shown by Lt.-Col. A. J. Sturmer, I.M.S.

The patient, a Hindu aged 53, mother of two children (the last eleven years ago), was admitted into the Government Maternity Hospital on June 19th, 1902, complaining of enlargement of the abdomen; there had been a gradual increase in size during the last two years. The periods had always been regular and painless. There had been amenorrhœa for the past six years. She had not aborted, or suffered from leucorrhœa. She was a well-made, healthy-looking woman, of large stature for a Hindu of this Presidency, and seemed strong, although her abdomen was enormously distended. There was no œdema of the feet or lungs, the heart was healthy, and the urine had a specific gravity of 1022, acid, and contained no albumen or sugar.

Measurements of abdomen:

Greatest girth, 3 in. above umbilicus .	$46\frac{3}{4}$ in.
Girth at umbilicus	$45\frac{1}{2}$,,
Between pubes and umbilicus . .	13 ,,
,, umbilicus and ensiform cartilage	13 ,,
From R.A.S.S. to U. . . .	14 ,,
,, L.A.S.S. to U. . . .	$14\frac{1}{2}$,,

The abdomen was enormously distended; the swelling was roughly oval in shape, and seemed median in position. The greatest diameter was from above downwards. In the semi-recumbent position the swelling hung over the pubes and rested on the thighs. The skin of the abdomen was smooth and shining; the superficial veins were dilated and prominent; there was no pigmentation, and the umbilicus was not obliterated. There was no tenderness. All along the right side the swelling was intensely hard, like that of a hard myoma of the uterus; above and to the left it was soft, and a fluid thrill could be elicited. There was free fluid in the peritoneal cavity, and the abdominal wall moved freely over the tumour, the surface of which was quite smooth. The uterus was small and anteflexed.

On June 24th abdominal section was performed. A free incision was made; the abdominal walls were thin, and on opening the peritoneal cavity the dead-white colour of the tumour was at once seen. A considerable amount of peritoneal fluid was evacuated at this time and later. A large trocar was pushed into the tumour, but no fluid was evacuated. The incision was therefore increased up to the umbilicus, the trocar again introduced into another part, but as no fluid again issued the tumour was incised and removed by morcellement, partly by scissors and partly by knife. About the region of the umbilicus there were dense adhesions; these were partly broken down by finger and partly by sponge-pressure. Until a great deal of the tumour had been removed no pedicle could be made out, but at last one was found on the left of the uterus, and as soon as practicable a large pair of clamp forceps was placed on it. As the tumour was gradually removed a great deal of ascitic fluid flowed out. Deep in the tumour, on the left side, a small quantity of fluid was found—how much I cannot say, as it became mixed with the ascitic fluid—and the trocar being pushed into it, evacuated the cyst. The tumour was much softer in this part, and the finger could be made to break down the tissue. All the rest of the tumour had to be cut away. On the right side and near the umbilicus the tissue was almost bony in hardness, and small spicules of bony or calcareous matter studded the surface. Behind and on the left the omentum was adherent, and pieces of it had to be ligatured and cut off. The tumour was not vascular, but there was some venous oozing from it, and a considerable amount of oozing from the peritoneal adhesions took place. The peritoneal cavity was dried; the pedicle transfixed and tied with a double interlacing ligature, and cut away below the clamp. The right ovary was shrunken and atrophied, and was not removed. One or two fine silk ligatures were applied to bleeding points on the anterior abdominal wall near the umbilicus—to other points pressure forceps. In Douglas's pouch a shallow cavity was found which admitted the end

of the finger; the edges were cut round with scissors, and then brought together by sutures. The abdominal wound was closed in three layers, and a litre of salt solution injected into the rectum. Liq. Strychninæ ♏x was injected hypodermically, as the operation of cutting up the tumour was a tedious one, and lasted altogether two hours. The patient stood the operation very well, and she was discharged from hospital on July 22nd, quite well.

Parts removed consisted of the left ovary, which had grown into a solid tumour—of stony hardness in places, in others soft and infiltrated with fluid. The pedicle was short, with large vessels, but the Fallopian tube was of normal size and not elongated, as is usually found in ovarian tumours, and it had practically no connection with the tumour, and was not included in the ligature. The tumour, which was not vascular, must have received a good deal of its blood-supply from the peritoneal adhesions, and the free anastomoses thus set up between it and the peritoneum and omentum no doubt accounted for the very slight œdema of the lower extremities, and perhaps prevented a large amount of ascitic fluid from accumulating in the peritoneal cavity. The weight of the tumour was 39 lbs., and of the fluid collected from the peritoneal cavity and tumour, 320 oz.

The tumour had been diagnosed as a fibroma or fibromyoma of the ovary, but from microscopical specimens made of it, it seems doubtful whether it is not really a sarcoma. If I had suspected this I should have removed the other ovary, although it was atrophied. Mr. Bland-Sutton, in his book on tumours, states (p. 94, ed. of 1894 "that in comprehensive ovariotomy lists, solid tumours make up 5 per cent. of the cases." This is certainly not our experience in Madras. We find solid tumours excessively rare, and it is partly for this reason that I report this case, and partly because the growth seems an unusually large one, and partly because I shall be much obliged if the Pathology Committee will examine the specimen of the tumour sent and give an opinion as to its nature.

Report of the Pathology Committee on Lieut.-Col. Sturmer's specimen of Fibro-myoma of the Ovary.

The piece of tissue described as ovarian is a triangular mass measuring 10 × 8 × 3 cm. It is solid, and of firm but yielding consistence. It is entirely devoid of the hardness of a healthy fibroma or fibro-myoma. The tumour presents a smooth whitish-yellow colour, and is indistinctly fibrous on section.

There is no capsule present, but what appears to be the natural surface of the mass is quite smooth, suggesting that it might have been shelled out of a capsule, but so much of the periphery of the growth has been cut away that this point must be left *sub judice*.

Microscopically the structure of the tumour is uniform. It is composed of a loose irregular network of fibrous tissue which has undergone general myxomatous change. The more delicate strands of fibrous tissue show no nuclei when stained by Ehrlich's hæmatoxylin, and only faintly take up eosin, but they react sharply to van Gieson's picro-säurefuchsin. The larger fibres show rod and spindle-shaped nuclei. The blood-vessels are not numerous; they have fully formed walls. The muscle tissue in the vessel walls stains a brownish red with van Gieson's reagent, and this stain proves that there is no muscle tissue in the tumour except that found in the walls of the vessels. There is a small hæmorrhagic cyst in the section measuring 140 μ in diameter. This has a thin band of fibrous tissue containing nuclei, as a lining membrane.

We regard the tumour as a fibroma which has undergone uniform and extensive myxomatous change.

(Signed) CUTHBERT LOCKYER. G. F. BLACKER.
HERBERT R. SPENCER. JOHN S. FAIRBAIRN.
J. H. TARGETT. ALBAN DORAN,
CORRIE KEEP. *Chairman.*

PRIMARY SQUAMOUS-CELLED EPITHELIOMA OF THE BODY OF THE UTERUS.

Shown by Mr. Alban Doran for Dr. F. C. Batchelor, Dunedin, New Zealand.

The following notes were written by Dr. Batchelor:

The accompanying specimen I take to be a primary squamous-celled epithelial growth of the body of the uterus.

Cullen, in his work on cancer of the uterus,* writes:

"This is a very rare occurrence, only a few cases being recorded, the majority of which I have collected; of these quite a number are doubtful. It has not been our good fortune to see a case of this variety." After discussing reported cases he concludes, "From the foregoing it is seen that there are on record at least three—those of Gebhard, Kauffmann, and Flaischlen."

I submit this specimen, therefore, and would ask that expert pathological opinion be obtained as to its nature.

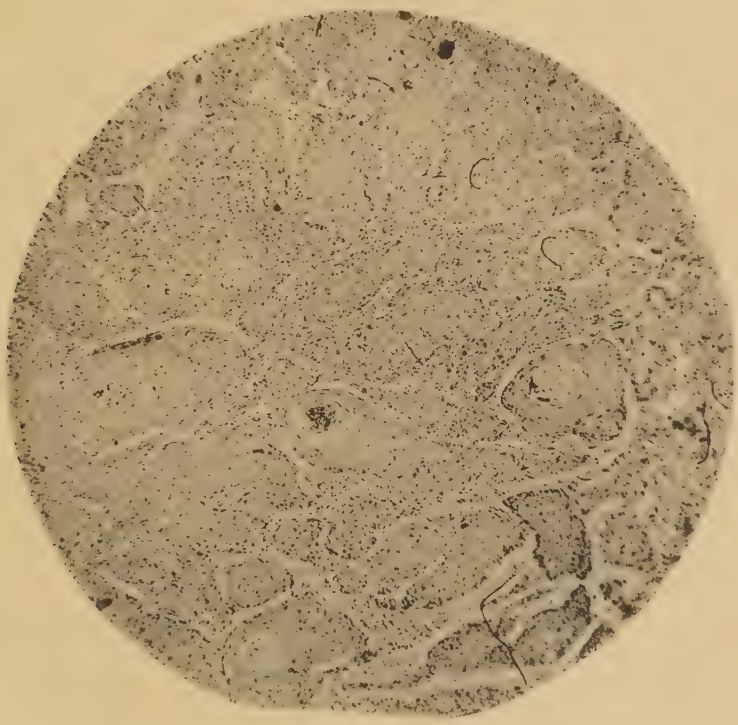
The microscopic section of the growth was kindly prepared for me by Dr. E. Williams, of this town.

The history is as follows:—J. J—, aged 64, married twenty-four years, widow for past twelve years, six children, the last twenty-seven years ago; climateric fourteen years ago. A stout, strongly built, well-preserved woman, has always lived an active life, hotel-keeping on the West Coast of New Zealand, is temperate in her habits, cannot remember a day's illness, never requiring a doctor, even in her confinements. She complains of a stinking vaginal

* 'Cancer of the Uterus: its Pathology, Symptomatology, Diagnosis, and Treatment,' p. 579.

discharge, which is occasionally blood-stained, sacral pains, and uncomfortable dragging sensations in the pelvis and front and inside of the thighs. Her general health is fairly good, but has deteriorated during the past six months. The pain started about eighteen months ago; she

Fig. 1.



first noticed the discharge, occasionally blood-stained, six or eight months ago; there was a free loss of blood eight weeks since, during the night. She says she first noticed the odour about six or eight weeks since, but her friends had observed it much longer. She had lost much flesh during the past year.

Vaginal examination.—There was an extremely foul

discharge from the vagina; the vulval orifice was sore, excoriated, and contracted; the cervix uteri was small and atrophied, but smooth and healthy.

Bimanually.—The fundus was enlarged, but movable; the cervical portion was not so free in consequence of the contraction of the vaginal attachment; there was no definite thickening or deposit to be made out around the uterus. The sound passed beyond the notch; the interior of the uterus was rough, and blood came away when the instrument was removed.

Diagnosis.—(*a*) Cancer of the body of the uterus; (*b*) senile endometritis with pyometria.

Operation (December 12th, 1902).—Ether administered; cervical canal dilated; about two ounces of stinking mucopurulent discharge escaped from the uterus. To the finger the whole of the interior of the body of the uterus felt rough, irregular, dense, and hard. Hysterectomy was at once performed; the abdominal route was selected in consequence of the sclerotic changes in the external genitals making any vaginal manipulations very difficult. The operation was not easy, the abdominal walls being thick, and the uterns low in the pelvis and held down by contracted vaginal attachments. The patient made an excellent recovery, leaving the hospital about a month after operation. So far (February 13th, 1903) she is keeping perfectly well, and her general health has improved.

Note by Mr. Alban Doran.—Mr. Cuthbert Lockyer examined the sections and made a few more, reporting:

He had carefully examined serial sections of the uterus reported on by Dr. Batchelor. The sections were prepared from the whole length of the uterus, reaching from the fundus through the body of the organ to the external os uteri. He found that the growth ended abruptly at the internal os. For the most part the neoplasm was a typical squamous-celled epithelioma, but two of the sections showed that it started in the columnar epithelium of the gland-tubules of the mucosa of the corpus uteri. Glands were

seen with their columnar lining still intact, but with their lumina filled by a mass of keratinised cells, whilst all around lay keratoid plates and processes surrounded by a vast amount of round-celled exudation. On the posterior wall of the corpus uteri the growth had invaded the tissues as far as the peritoneum, and the cavity was distended as if by fluid pressure, but there had been no actual perforation. Dr. Lockyer regarded this as the most extreme case of metaplasia he had ever seen. With regard to nomenclature, he thought that although the tumour arose from columnar epithelium it was nevertheless better to speak of it as a squamous-celled epithelioma of the body of the uterus, inasmuch as that was the only term which satisfactorily comprehended the main features of the growth. The age of the patient (64) explained the character of the epithelium; senility produces squamous and keratoid changes in the columnar epithelium of the uterine mucosa —such metaplasia occurs independently of new growth formation.

Mr. Targett examined the sections, and is of the same opinion. Another section through the endometrium and subjacent tissues at a spot where the morbid deposit was distinct to the naked eye was made at the museum of the Royal College of Surgeons, under the direction of Mr. Shattock. It shows well-developed squamous cells invading the deeper tissues, and there are a few distinct nests. I exhibit this evening both Dr. Lockyer's and the College sections. The cervix was atrophied and free from disease.

A DEGENERATED UTERINE FIBROID THREATENING TO RUPTURE REMOVED BY TOTAL ABDOMINAL HYSTERECTOMY.

(With Plate XIII.)

Shown by Dr. Herbert Spencer.

The specimen is a uterus removed by total abdominal hysterectomy.

An interstitial fibroid is seen in the fundus uteri towards its anterior part. The fibroid has undergone myxomatous degeneration, and in the upper part is cystic. The muscular wall, which is thick below and gradually diminishes towards the top, has squeezed out the pulpy contents through the thin muscular shell above until the tumour appeared on the surface as a bleb, with gelatinous contents, covered only with peritoneum. This peritoneum is actually cracked in one spot, and there is no doubt that the process of extrusion would have gone on until in a very short time the tumour would have burst into the peritoneum, setting up peritonitis, which I have known to occur in several cases from rupture of a degenerated fibroid. The free subperitoneal portion of the tumour appeared during life as a slightly movable cyst, and gave rise to an error of diagnosis, the larger tumour being thought to be ovarian, and the smaller tumour to be a mass of secondary cysts. The history of the case is as follows :

A. F—, aged 39, single, was admitted to University College Hospital on July 23rd, 1902, complaining, for a month, of habitual excessive loss at the periods, and a swelling in the abdomen, and pain when she lay down. She stated that the pain only occurred when she lay down, and disappeared when she got up. Since she first

DESCRIPTION OF PLATE XIII,

Illustrating Dr. Herbert Spencer's specimen of a Degenerated Uterine Fibroid threatening to Rupture removed by Total Abdominal Hysterectomy.

The plate represents a sagittal section through the uterus and tumour. An interstitial fibroid is seen in the anterior part of the fundus. The muscular covering of the tumour is seen to diminish in thickness from below upwards until at the upper extremity the muscular coat has been broken through, and the pulpy and in part liquid degenerated fibroid has been squeezed out, so as to raise the peritoneum into a bleb. There was a slight crack (not seen in the drawing) in this bleb. In a short time the peritoneum must have given way, allowing the contents to be discharged into the abdominal cavity. The endometrium is slightly hypertrophied.

Illustrating Dr. HERBERT SPENCER'S Case of Degenerated Uterine Fibroid threatening to rupture, removed by total abdominal hysterectomy.

Bale & Danielsson, Ltd.

noticed the tumour, a month ago, she thought it had increased in size and moved about.

Menstruation began at sixteen and was quite regular, but the periods lasted for a week and left her very poorly. She had always lost too much, using two dozen diapers each time. She did not have much pain at the periods. She had to get up once at night to pass urine; otherwise there was no trouble with micturition. The bowels were regular; the appetite poor. Several members of the patient's family had died of consumption.

On admission the patient was rather thin, but looked very well and had a good colour. The heart-sounds were normal. The breath-sounds were feeble at the left base in front. There were no râles.

There was a tumour in the abdomen of the size of a cocoa-nut, apparently cystic, reaching up to a height of $5\frac{1}{4}$ inches above the pubes; on the top of this, towards the front, was a flattish cystic body, somewhat larger than an ovary, which appeared to be attached to the main tumour by a short pedicle or fold of peritoneum. *Per vaginam* the hymen was intact, the cervix small, the uterus slightly retroverted, and the tumour, which was not freely movable, in front of it. *Per rectum* the fundus of the uterus could be felt, and appeared to be distinct from the tumour. The uterus was not appreciably enlarged.

The small cystic tumour resembled a cystic ovary, but the position of the fundus showed that it could not be an ovary. I have not met with a *small* pedunculated sub-peritoneal cystic fibroid, and therefore did not think it likely to be of that nature. In view of the cystic feel of the large tumour I thought it was a multilocular ovarian tumour, and that the smaller tumour was a mass of secondary cysts, the mobility of which was possibly due to the main cyst having given way.

On July 26th, 1902, I removed the uterus by total abdominal hysterectomy (Doyen's method), closing the peritoneum with a purse-string suture of fine silk and leaving the vagina open, but without drainage-tube or

gauze. The patient recovered well; the highest four-hour temperature during her stay in the hospital was 100·6°.

She left the hospital on August 25th, 1902, and at once took a situation as waitress in a restaurant, working six hours a day. Seen four months later she was very well, having had no trouble since the operation except a little diarrhœa. The scar was sound, four inches long. The vagina was movable, not prolapsed. There was no tenderness, and no mass or exudation to be felt on vaginal examination.

Under the microscope the tumour was found to be a fibro-myoma, which had undergone myxomatous degeneration, and the mucous membrane of the body to be slightly hypertrophied.

A METHOD OF TAKING INTRA-UTERINE BACTERIOLOGICAL CULTURES.

By A. W. Sikes, M.D., F.R.C.S.

Dr. Sikes showed some tubes which he had had made some months ago for the purpose of taking intra-uterine cultures at Queen Charlotte's Hospital.

The apparatus consisted of two strong glass tubes; the outer was 7½ inches long, and 1 inch in diameter at the broader, tapering to ¼ inch at the narrower end; at this end, ¼ inch from the extremity, there was a ridge, by means of which a piece of thin rubber could be stretched tensely over and secured by silk thread.

The inner tube was an inch longer than the outer, fitted inside it, and, when the rubber cap was not on the outer, projected an inch from its smaller end.

Dr. Sikes said he had used the tubes in cases where it was necessary, for some reason, as slight rise of tempera-

ture, to give an intra-uterine douche; and described the use of the tubes as follows:—The tubes, the outer with the rubber attached, were boiled for fifteen minutes and allowed to cool in the steriliser. The vagina was then well sponged out, the uterus pulled down and steadied with vulsellum forceps, and then the outer tube taken directly out of the steriliser, and the rubber-covered end put an inch or more up the cervix; the inner tube was then put inside the outer and pushed through the tense rubber cap—which when punctured retracted at once,—the inner tube thus reaching an inch further up. Cultures were then made in the usual way from the secretion which flowed down the inner tube.

Dr. Sikes said he did not wish to speak of results now, more than to say that since he had used these tubes there had been a larger proportion of sterile cultures than formerly.

Less perfect methods often resulted in having in one's cultures organisms obtained from the vagina. The sizes shown he had found most convenient for use in cases for the first week or two after confinement.

AN UNUSUAL FORM OF SUCCENTURIATE PLACENTA.

Shown by Dr. A. W. Sikes.

Dr. Sikes showed a specimen of succenturiate placenta from a case in Queen Charlotte's Hospital. The distal succenturiate portion was nearly as large as the main part of the placenta. Connecting the two parts was some diffuse placental tissue; two large vessels crossed this bridge, while one aberrant vessel reached the succenturiate part by running in the membranes outside the proximal portion. The cord was inserted at one end of the main placenta, so that the whole had a battledoor appearance.

AN OPERATION BETWEEN THE THIRD AND FOURTH MONTHS OF EXTRA-UTERINE GESTATION, WITH REMOVAL OF A LIVING FŒTUS, AND MUCH TROUBLE FROM HÆMORRHAGE DURING CONVALESCENCE.

By John D. Malcolm, F.R.C.S.Edin.,

SURGEON TO THE SAMARITAN FREE HOSPITAL.

(Received March 23rd, 1903.)

(*Abstract.*)

The patient, a healthy woman, was married on October 9th, 1899, at the age of 23. In the middle of April, 1900, she felt depressed, and menstruation became irregular. She had attacks of pelvic pain, with nausea, commencing on May 12th, June 3rd, June 15th, June 28th, and July 12th. In the last two attacks there was fever, and in the final one there was obstinate constipation and vomiting. On July 17th there was a large abnormal mass felt behind the upper part of the vaginal wall, nearly filling the pelvic cavity, and rising to about halfway between the pubes and the umbilicus. The uterus was somewhat enlarged, was dragged up, and pushed over to the left side of the pelvis.

On July 18th, 1900, an incision was made in the middle line above the pubes, a small pus cavity being opened, and through it the amniotic sac was evacuated. A fœtus of between three and four months' development was extracted without opening the peritoneal cavity, and the placenta was felt with an extensive attachment over the right side and floor of the pelvis. The cavity was packed with iodoform gauze, and no attempt was

made to remove the placenta. The latter remained alive, and there were frequent and sometimes profuse hæmorrhages when the gauze packing was changed between July 24th and August 10th. On the latter date an attempt was made to break up and get away the placenta. A small piece was torn off, but hæmorrhage was so alarming that the wound had to be packed immediately. The placenta was killed by this procedure, and there was hardly any blood lost afterwards, although every bit of the placenta had to be peeled off the maternal tissues, and its removal was not completed until August 26th. There was an inflammatory attack with some intestinal difficulty in September, and the wound did not finally heal until the middle of December. The patient is now in perfect health.

A table containing a short note of all the cases reported in the Society's 'Transactions' between 1887 and 1902 is added to the paper. Some of the methods of arresting hæmorrhage and other points are referred to, and it is urged that when an extra-uterine fœtation is diagnosed, if it is believed that the fœtus is alive, an operation without any unnecessary delay should always be recommended.

Cases of extra-uterine fœtation vary greatly as regards the position and connections of the amnion and placenta, and in the advanced stages of the abnormality it may be said that no two examples are exactly alike, although several broad groups may be distinguished by the relations of the fœtal and maternal structures to each other.

The treatment of the condition by surgical means may be a matter of the greatest ease or of extreme difficulty, and the danger of the operation is much increased in some cases by the fact that the fœtus is alive, whilst in other circumstances the greater risk arises from the fact that the fœtus is dead.

In the case here recorded the operative procedure was quite simple, and there was no hesitation in deciding that the placenta should be left for subsequent treatment or to separate by a natural process; but convalescence extended over a period of five months, whilst anxiety as to the result did not cease until more than two months after the

removal of the fœtus, and on several occasions during the first twenty-three days it seemed not unlikely that the patient might die of hæmorrhage during a dressing of the wound.

The patient was a Canadian woman of very good physique, and twenty-three years of age. She enjoyed perfect health before her marriage on October 9th, 1899, and there was no sign of mischief of any kind until the middle of April, 1900. She then, to use her own language, "felt anæmic," and had a "loathing for food." Menstruation up to that time had been quite regular, and lasted six days. A period began on April 20th, after the usual interval, and was not remarkable except that it continued for nine days. The first indication of mischief which attracted serious attention occurred on May 12th, when the patient was seized during the night by a sudden pain in the pelvis, which was sufficiently severe to make her call out. She vomited, and afterwards suffered from nausea. She was then in Paris, and did not consult any medical man, as the pain did not last long and was insignificant after a few hours. Another menstrual period was expected on May 17th, but the discharge did not begin till May 26th, and it continued irregularly till June 3rd. The patient's condition did not interfere with her arrangements, and she came to London on June 1st. She went by coach to Hampton Court on June 3rd, and in the evening of that day she was again seized with severe pain in the abdomen, accompanied by vomiting and nausea. The late Mr. Manley Sims was sent for, and the patient gradually recovered under soothing treatment. The menstrual flow, which had stopped on June 3rd, began again on the 4th and continued until the 13th; on the 14th the patient was so much better that she went to Ascot, and on the 15th she had a third attack of pain and vomiting. On the 17th a consultation was held, and a diagnosis of extra-uterine fœtation was made. It was decided not to advise surgical interference, but to watch the progress of the

condition. The patient was better on June 24th, but on the 28th, after sitting up and walking round her bedroom, she had another (the fourth) attack of pain, and on this occasion a slight rise of temperature was noted.

I saw the patient in consultation with Mr. Sims on July 3rd, 1900, nine months after her marriage, and two and a half months after the first menstrual irregularity. There was a mass about the size of a three-months-pregnant uterus in the pelvis, extending more to the right side than to the left. The inferior border of this mass was behind the upper part of the vagina, well below the level of the os uteri, and very hard and firm in consistence. The cervix uteri was high up in front, close to the pubic bones, and a little to the left of the middle line. The body of the uterus was attached to the left side of the abnormal mass, and its cavity was three inches in length as measured with a sound. The patient's skin was sallow and unhealthy, and she stated that her natural complexion was beautifully clear. The breasts did not show any marked evidence of pregnancy. The pulse was good, and there was no rise of temperature.

I agreed with the diagnosis of an extra-uterine fœtation, but I thought it just possible that the abnormal mass might be an inflamed ovarian cystoma with a twisted pedicle. I advised immediate operation as the proper treatment in either case, but this advice was declined for a time.

On the morning of July 17th I was asked to see the patient again. There had been one more (the fifth) attack of pain, which, however, was not so severe as the others, probably because the patient was kept quiet in bed. Sir John Williams had seen her with Mr. Sims on July 13th and 16th. He agreed with the diagnosis made, and he also advised immediate operative treatment. I found the conditions changed. The abnormal mass was considerably larger and more median in position, and whereas it had been almost all in the pelvis, it now extended halfway to the umbilicus. The hard mass was still felt behind

the upper part of the vagina. There was constant pain in the right iliac region, and the parts were all very tender to manipulation. The skin over the right side of the lower abdomen had a glazed appearance, which suggested the probability that pus formation had taken place underneath. The temperature was 101·5°, the pulse was beating 90 to the minute, the cheeks showed a hectic flush, and the complexion was more sallow than at my first visit. There was frequent vomiting. There had been a slight rise of temperature, and the bowels had been completely blocked for several days, laxatives having been given without effect.

Twenty-four hours were devoted to unsuccessful attempts to induce an action of the bowels by enemata, and I operated on July 18th, 1900, assisted by Dr. Hubert Roberts, Mr. Wm. C. Bull giving the anæsthetic, and Sir John Williams and Mr. Manley Sims being present. I carefully cut down in the middle line above the pubes until I exposed a sac containing fluid, the peritoneal cavity not being opened. By means of an aspirating needle inserted into the sac a little over an ounce of opaque matter was withdrawn, and on subsequent examination this was found to be pus. As an attempt to enucleate the sac seemed impracticable, the puncture in its wall was enlarged with a pair of forceps, and more pus escaped along with a few ounces of clear fluid. When a finger was introduced through the opening thus made a fœtus was at once detected, and it was easily extracted after a slight further enlargement of the incision. The appearance of the fœtus indicated that it was still alive, the skin not showing the slightest sign of decomposition or peeling of its surface, and the umbilical cord being also quite healthy. It is therefore certain that the pus removed must have formed outside the amniotic sac. On examining the interior of the cavity from which the fœtus was taken, the placenta was felt to the right, with a large attachment to the side of the pelvis, and it was decided in consultation that no attempt at its immediate removal

should be made. The amniotic sac was washed out with iodine and water and packed with iodoform gauze, the end of the divided umbilical cord being kept outside.

There was little shock from the operation. The temperature rose to 100·4° F. the first night, and gradually fell to nearly normal three days later. From this time there was no rise of temperature until after the death of the placenta on August 10th. The pulse was 120 for about six hours after the patient was put to bed, and it also gradually fell to between 90 and 96 beats to the minute. Flatus passed from the rectum within twenty-four hours of the operation; the bowels gave little trouble, and were moved freely on the fourth day by enema. The kidneys acted well.

The plug of gauze was left undisturbed in the wound until the fifth day. On its being removed a collection of about half an ounce of pus was released from near the surface. Next day the packing was again changed. The parts looked quite healthy, and there was very little pus. A very free hæmorrhage occurred from the deeper part of the cavity, but it stopped when the packing was reinserted. The loss of blood was so serious that I asked Mr. Bull to be present at the next dressing in case it should be thought necessary to give an anæsthetic. The bleeding returned for some days whenever the gauze was removed from the deep part of the wound, and blood was occasionally lost to a serious extent, but re-plugging the cavity always stopped its flow. On the ninth day after the operation, July 27th, Sir John Williams saw the patient in consultation, and the hæmorrhage on that occasion was much less. Two days later there was no loss of blood, and there was no further loss till August 2nd, when there was again a free hæmorrhage. On August 4th the placenta was seen in the wound. It looked quite healthy, and was evidently alive and well nourished. The cord had sloughed away with the discharges before this date. After a careful examination with the finger an attempt was made to separate the

connections of the placenta to the maternal structures where they lay nearest to the surface, and a sinus was at once opened which held the tip of my forefinger easily. This gave rise to profuse bleeding, which, however, was again arrested by pressure. As the repeated hæmorrhages, although easily checked, were affecting the patient's general condition, and on the last and several other occasions they caused serious loss of blood, no further attempt to separate the parts was made for some days. It seemed that each separation must leave two healthy raw surfaces together, and that this was likely to give rise to more intimate and firm adhesions. Moreover there was the possibility that a natural separation would take place. Under inactive treatment there was no further hæmorrhage, and on the other hand there appeared to be no progress. I thought of having the patient put under an anæsthetic and trying to completely remove the placenta, but after talking over the matter with Sir John Williams another attempt was made on August 10th, without anæsthetic, to separate the placenta with a view to getting at least a portion of it away and breaking it up. A determined effort was made, and a small piece of the placenta was broken off and removed, but it was necessary to desist almost immediately on account of a copious hæmorrhage. At least thirty ounces of bright red blood were lost in a few seconds, and the patient was speedily on the verge of fainting. The wound was at once re-plugged, whilst Mr. Sims promptly applied all the usual remedies for the general condition. The patient revived after a little time, but she remained extremely pale and collapsed for some days, with a pulse from 100 to 112 beats to the minute, and she only very gradually got back a little colour. After this dressing (on August 10th) there was never more than a drop or two of blood lost in changing the plugs, and it was quite clear that the placenta had been deprived of all vitality. The vaginal discharge, which had begun after the operation and had continued off and on, became more free on

August 11th, and ceased altogether a few days later. On the 12th there was much abdominal pain. On the 15th the discharge from the wound was offensive, and from the 15th to the 17th the temperature rose to 101° or 101·2° F. each night. Sir John Williams again saw the patient with Mr. Sims and myself on August 17th, and suggested firm plugging round the placenta so as to prise it off from the maternal tissues and prevent reunion of raw surfaces. The placenta, however, remained strongly adherent, and eventually every bit of it had to be peeled off with the finger. It was not possible to do much at a time on account of the pain caused by the necessary manipulation, and the whole of the placenta was not got away until August 26th, thirty-nine days after the operation. From the 15th, when the discharge from the wound became fœtid, until the complete removal of the after-birth, the temperature and pulse were constantly a little above normal, and the discharge was offensive. The patient was very weak, and she sweated profusely. After August 26th the temperature and pulse became normal, and the general condition steadily improved. All the functions were properly performed, laxatives and enemata being given when necessary. The discharge ceased to be offensive and the wound contracted. After the last of the placenta was removed, the hard mass which had been behind the upper part of the vagina was no longer to be felt there, but a probe passed through the wound could be easily defined by the finger through the posterior vaginal wall, and could be pushed as low as the level of the os uteri. The placenta had been adherent over the right side of the pelvis nearly as high as the true brim, over part of the left side of the sacrum and also over part of the left side of the floor of the pelvis. The pieces collected were preserved in spirit, and when thoroughly shrunk they occupied a space equal to that of about two fluid ounces.

I am unable to state the position of the right ovary and tube. They must have been pushed aside, and only

gradually returned to their proper place as the parts contracted. The ovary was not discovered until September 13th.

On August 26th, when I removed the last portion of the placenta, I put a large drainage-tube in the sac, and this was gradually reduced in size and length, the sac being washed out daily with creolin or corrosive sublimate solution.

There seemed to be no likelihood of further trouble, and I left town on August 31st, the case being left in the care of Mr. Manley Sims, who had helped me up to this time, and later his partner, Dr. Roxburgh Fuller, took charge. All went well until September 12th. On that date the patient complained of indigestion, abdominal pain, and headache, and she vomited frequently during the afternoon. A restless night was passed, and the vomiting continued. There was little distension of the abdomen, but very little flatus escaped from the rectum. A free evacuation of the bowels had been induced by enema on September 11th, and after that neither laxatives nor enemata gave relief. The temperature was normal, the pulse was 96. I saw the patient on the 13th. The sickness was then less, but at night the temperature was 101·2° and the pulse was 108. By vaginal examination a tender body was discovered on the right side of the uterus in front of the sinus. I thought this was the ovary, and that the unfavourable conditions were probably due to the oncoming of a menstrual period, there having been no vaginal discharge for about a month. The patient complained of much pain in the back, in both groins, and down the thighs. The abdomen was not much distended, but it was fuller than normal in its lower part. The slight distension was peculiarly placed, its upper limit forming approximately a section of a circle, the centre of which was the mouth of the sinus. The opening of the wound looked healthy. Feeding by the mouth had been stopped because of the vomiting, and rectal feeding was substituted. A grain of calomel given next morning, with an

enema in the afternoon, induced a free action of the bowels. On this day (September 14th) the temperature rose to 105° and the pulse to 116. There was much pain in the pelvis, and a very slight menstrual discharge came on. Opium was administered, and a large poultice was placed over the abdomen.

The patient was better on the morning of the 15th, with more vaginal discharge, but at night she was very ill, and the temperature rose to 104°. There was now more discharge from the wound, and the tender body which I thought was the right ovary was larger and more diffuse. On September 16th there was a distinct increase in discharge from the wound, and the mass in the pelvis was smaller, and again seemed to me like an ovary. The discharge from the wound gradually diminished; after a few days the temperature became normal, the bowels responded to laxatives and enemata, and all pain ceased. The period stopped on September 18th, having lasted four days. There was some offensive discharge from the wound, and the temperature rose in the evening until September 22nd, the abdomen remaining distended round the sinus. A probe in the wound could still be felt behind the vagina as low as the os uteri. Everything went well after this except that the discharge was occasionally offensive and the sinus showed no tendency to shorten. The right ovary and afterwards both ovaries were easily felt. About this time large casts of the bowel were frequently passed at stool. One which was secured on September 28th was submitted to Mr. Targett, and he kindly reported that it was a "typical mucous cast from the large intestine, and does not contain any portion of the mucous membrane. It is evidently due to a chronic catarrh of the colon associated with the suppurating sac, which must be adherent to the sigmoid, etc." Mr. Targett stated that he had seen several cases of this catarrh in connection with pelvic suppuration, and others have come under my observation. All the conditions gradually improved after this time. On November 8th the patient went to Brighton

and was under the care of Dr. Uhthoff. She returned towards the end of the month, still with a sinus leading down to the back of the cervix uteri. She sailed for New York after a few days, and arrived on December 8th. The voyage seems to have done much good. Dr. Bull, of New York, found the wound healing fast, and within a fortnight it had finally closed. Subsequent reports were invariably satisfactory, and after a few months the patient had made a complete recovery in every respect. I saw her on June 13th, 1903, and she told me that her health was perfect.

In this case no uterine decidua was recognised in the discharges at any time. The fœtus, as is not unusual, was not quite symmetrical.

It is not possible to speak positively of the relations of the parts in this case, but it seems probable that the Fallopian tube burst into the cellular tissue between the layers of the broad ligament, and that the placenta became attached to the wall of the pelvis in such a position that it did not involve any portion of the intestine. The peritoneum was gradually raised out of the pelvis by the enlarging gestation sac, and on five occasions there were attacks of pain and intestinal difficulties induced by tearing of the connective tissue, these attacks being generally determined by some exertion. Shortly before the operation suppuration occurred, probably from infection passing through a portion of the intestinal wall damaged by traction or compression. Fortunately the abscess developed in the line of the incision necessary to expose the fœtal sac, and the operation was performed in time to prevent serious trouble arising from the formation of pus. There was no evidence that hæmorrhage into the tissues had occurred at any time. The pain and rise of temperature in the middle of September were due partly to the advent of the menstrual period, partly to some bowel difficulty. Probably there were coils of intestine adherent to the sac of the gestation, where the suppuration occurred before the operation.

Hæmorrhage from the placental site is one of the most serious complications met with when an operation is undertaken for an extra-uterine fœtation after a well-defined placenta has formed, and when the child is still living. Dr. Champneys, in 1887 ('Obstet. Soc. Trans.,' vol. xxix, p. 456), collected eighteen such cases, which were operated on, and sixteen of the patients died. To avoid hæmorrhage in his own case, Dr. Champneys left the placenta (l. c.) undisturbed, and the external wound healed completely. All went well until the patient was permitted to move about on the thirty-second day after the operation. From that time there were evidences of septic infection, and the patient died on the eightieth day. Aust Lawrence recorded a case (vol. xxx, p. 122) in which the fœtus was aged 4 months, and in which it was thought that the placenta was not removed at the operation, and did not come away at any time. A separate tumour was, however, removed, and a committee of the Society thought that this was the placenta. In a case operated on by Dr. J. W. Taylor the wound healed over the placenta, and union was firm after twelve days, but signs of septic mischief developed and the wound was reopened for the removal of the placenta, which had become putrid. The patient made a good recovery.

The dangers of hæmorrhage may sometimes be very slight. In a few cases a large well-developed placenta has been found so attached to the tube, or uterus, or omentum, that the operator was able to secure all its blood-supply by ligatures with little or no loss of blood ('Obstet. Soc. Trans.,' J. W. Taylor, xxix, p. 178; J. Bland-Sutton, xl, p. 308, and xliv, p. 316). Under such conditions, when the child is alive there may be no more risk than in the removal of an ovarian tumour. In the great majority of cases in which an operation is performed at an early period of gestation, it is possible to prevent hæmorrhage after the operation by tying and dividing the broad ligaments. In these early cases much blood may flow when adhesions are separated, but most of it comes from the Fallopian tube,

and very little from the parts to which the fœtation has become adherent. Hence when the vessels in the broad ligament are secured, there is no further trouble from hæmorrhage. When the rupture of the Fallopian tube occurs in that part which is within the uterine wall, there may be very great difficulty, and it might even be necessary to remove the uterus; but Bland-Sutton ('Obstet. Soc. Trans.,' vol. xxxvii, p. 286) in one case of this kind successfully secured the parts by means of two double transfixing ligatures.

When, as in my case, the placenta has escaped from the tube, and has spread itself over adjacent tissues in such a position that there is no possibility of tying the vessels supplying it with blood, the only modes of procedure are to peel off the placenta or leave it to die and come away spontaneously. In normal conditions the placenta is separated and is thrown off from the interior of the uterus when the child is delivered, but part of it may remain adherent. If a dead piece of the placenta or of the membranes continues adherent and becomes putrid, it usually gives rise to septic absorption. If a living piece of placenta remains attached, and it would appear that it may continue thus indefinitely, it causes severe hæmorrhages at and between the periods, and any attempt to separate it causes very free bleeding.

A placenta developed outside the uterus may remain adherent in the same way as a placenta *in utero*, whether it be dead or alive, and there is evidence which seems to show that the living placenta of an extra-uterine fœtation may grow after the death of the fœtus (Lawson Tait and Christopher Martin, and Hart and Barlow, quoted by Tait and Martin, vol. xxxiv, pp. 206 and 210). A dead placenta may usually be peeled off with little loss of blood, but sometimes the removal of a dead placenta induces very dangerous bleeding, as in Dr. Taylor's case ('Obstet. Soc. Trans.,' vol. xxxiii, p. 115). Dr. Champneys, quoting Litzman, said that furious bleeding had occurred from the placental site four months after the death of the child

('Obstet. Soc. Trans.,' vol. xxx, p. 486). It was not stated whether the placenta in this case was dead, or adherent and alive. If the placenta is living the hæmorrhage on separating it is usually very profuse. One of the chief causes of the natural separation of the placenta from the inside of the womb—namely, the contraction of the muscular fibres of the uterine wall—is absent when the placenta is not in the uterus. The importance of this is well shown by a case recorded by Dr. Galabin ('Obstet. Soc. Trans.,' vol. xliv, p. 228) in which the placenta of an extra-uterine gestation was attached to a uterus which contained a child. Abortion took place three days after the operation; the extra-uterine placenta was separated from the contracting uterus, and death from hæmorrhage took place. The contraction of the wall of the uterus is also a potent agent in arresting hæmorrhage. Hence the conditions when the gestation is outside the womb favour a continuous adhesion of the placenta, and also tend to permit a free hæmorrhage when the parts are separated. Moreover the vessels supplying blood to an extra-uterine placenta are always large, and this also facilitates hæmorrhage.

For these reasons it is generally accepted that, if the attachments of the placenta cannot be cut through and ligatured, the proper course in operating is to leave the after-birth to die and be thrown off by the tissues, the wound being kept open to permit of its escape (Sir John Williams, 'Obstet. Soc. Trans.,' vol. xxix, p. 482). Hæmorrhage, whether due to deliberate attempts to remove the placenta, or arising from accidental causes, has sometimes been arrested by the application of a perchloride of iron solution with pressure (Lawson Tait, 'Obstet. Soc. Trans.,' vol. xxix, p. 505; J. W. Taylor, l. c., vol. xxxiii, p. 215; Wm. Duncan, vol. xxxv, p. 215). In a very remarkable case, in which Mr. Marmaduke Sheild found that a large slough of the whole thickness of the abdominal wall had formed, free hæmorrhage was controlled by a continuous stream of hot water, and the patient recovered ('Obstet.

Soc. Trans.,' vol. xxxiii, p. 128). Mr. Sidney Turner used hot water successfully in the same way (l. c., vol. xxxv, p. 178). Ligatures have been used when an attempt to peel off the placenta has induced profuse bleeding (W. S. A. Griffith, 'Obstet. Soc. Trans.,' vol. xxxiii, p. 126; Wm. Duncan, vol. xxxvi, p. 146; Arch. Donald, vol. xli, p. 7). Pressure has also been used very frequently, and these methods have of course been combined (E. Malins, 'Obstet. Soc. Trans.,' xxxiv, p. 181; Peter Horrocks, l. c., vol. xxxv, p. 188; A. L. Galabin, l. c., vol. xxxviii, p. 81).

In the case I have related the duration of life of the placenta after the operation was unusually prolonged, and it appeared as if it would continue adherent and alive indefinitely, until I attempted to break it up on the twenty-third day after the operation. The manipulation to which it was subjected on that occasion, and perhaps also the very firm pressure applied, caused the death of the placenta, and then hæmorrhage gave no trouble, although the placenta remained so firmly adherent that it was necessary to peel it off bit by bit. Probably, after I thought it was all removed, some small pieces remained adherent, and only came away on being separated very slowly by the surrounding granulations. When separation was complete the wound rapidly healed.

A study of published facts, of my own cases and of others which I have seen, leads me to the conclusion that when an extra-uterine gestation is diagnosed, if it is believed that the fœtus is living, an operation should always be recommended without unnecessary delay. There are a few instances in which the fœtus dies without giving much trouble, shrivels up and becomes encapsuled; but in the great majority of cases in which the fœtus lives beyond the earlier weeks of gestation, and is not removed by operation, septic mischief and death or a very prolonged and dangerous illness must be expected. Delay in operating offers an opportunity for the development of such complications without in any way rendering interference more easy or more safe. The cases in which the removal

of the placenta is most dangerous on account of its attachments to hollow viscera, are the cases in which the greatest danger will arise if the placenta becomes putrid. The risks of an operation should, therefore, be undertaken as soon as arrangements can be made. If the child is alive I do not think there are any circumstances in which the conditions, whatever they may be, are likely to change so as to become less serious or more easy to deal with.

The operation in the early stages of gestation is a very satisfactory one. It so happens that I have never been asked to operate on a patient who was bleeding to a really dangerous extent from a rupture of the Fallopian tube, and I have been lucky in never being asked to operate on a case in which the fœtus was putrid. Hence, with the exception of the case published in the 'Transactions' (vol. xli, p. 223), in which the bones of a fœtus had been retained seven years and I had to disturb them in performing an ovariotomy, the bowel being injured in doing so, I have not lost a case from this operation. But this does not show how very satisfactory the operation is. I have formed a strong opinion that women who develop extra-uterine fœtations are likely to stand operations unusually well. It has been suggested to me that this is due to their being pregnant. Whatever the cause, the fact that these patients recover in an extraordinary way from the most severe operations has impressed me on many occasions.

It is likely that as the symptoms become better understood, cases of extra-uterine fœtation will be generally operated on when the sac is small and before any serious loss of blood takes place, for there is, as a rule, some warning symptom to direct attention to the parts before a fatal hæmorrhage occurs. It is to be feared, however, that there will always be a number of cases in the future as in the past, in which no medical man will be called in until serious complications arise. Moreover, the patient and her friends may refuse to permit an operation as long

as she appears to be, and perhaps feels, quite well. Such considerations should be overruled as often as possible, for although we cannot always estimate exactly the complications that may have to be encountered, yet it cannot be too firmly stated that any unreasonable delay will make operative interference more dangerous in cases of extra-uterine gestation whenever the child is living.

If the embryo is believed to be dead and the gestation has only developed for a few weeks, a cure may take place without any resort to operative treatment, but even under these circumstances the patient should be very carefully watched; and in many cases when the child dies at a very early stage of gestation, and when there are no urgent symptoms, it may be safer treatment to operate and remove the Fallopian tube and the blood-clot which is so often found in the peritoneal cavity in these cases. It should not be forgotten that although the embryo may die the placenta may adhere and live.

There is one other point in this case to which I wish to refer, namely, the fact that the extra-uterine gestation occurred in a healthy woman soon after marriage. It has frequently been said that an extra-uterine gestation usually occurs after a long period of sterility in a parous woman. In the cases recorded in the Society's 'Transactions' since 1887, there are fifteen in which the first gestation was extra-uterine, and two in which this is implied but not definitely stated. I have in my own practice had four cases in which an extra-uterine fœtation occurred in young women soon after they married, or had an opportunity of becoming pregnant. It is therefore certain that the fact of a patient being healthy and recently married must not be considered to indicate that the probabilities are against the correctness of a diagnosis of extra-uterine fœtation. In all my patients in which this abnormality occurred soon after marriage the history suggested the diagnosis before the patients were examined, because irregularity of menstruation was so markedly in contrast with the regular menstruation previously existing. The change was very definite in the case I have related above.

When a patient has suffered for many years from irregularity of menstruation the difficulty of diagnosis is much increased, for an important part of the history is then absent. It must not be forgotten that there are cases in which there is complete amenorrhœa during the whole period of an extra-uterine gestation (Herbert Williams, 'Obstet. Soc. Trans.,' vol. xliv, p. 225).

A CASE OF RUPTURED TUBAL GESTATION, IN WHICH THE OVUM CONTINUED TO GROW FOR ABOUT FOUR WEEKS AFTER RUPTURE, THE GESTATION SAC BECOMING IMPLANTED ON THE OMENTUM.

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(*Abstract.*)

The symptoms began with uterine hæmorrhage and the passage of a ? decidual membrane on December 27th, 1903; this was after a period of amenorrhœa dating from the end of October (eight or nine weeks).

Signs of internal hæmorrhage appeared on January 11th, 1903 (about the eleventh week of gestation). A swelling in the left ovarian region was palpable on January 20th.

A second crisis occurred on February 5th, and a third on February 9th.

The operation took place on February 11th, and death took place twenty-four hours later.

The primary tubal rupture occurred through the upper, or peritoneal, aspect of the tube, and the fœtus escaped into the abdominal cavity; chorionic villi gained immediate attachment to the lower edge of the omentum, which approximated, and presumably was adherent to the tube prior to rupture. The omentum enveloped the gestation products and soon shut them off from the general peritoneal cavity.

* I am indebted to Dr. Amand Routh for the kind permission to publish this case and for supplying the clinical data.

The secondary gestation sac, so formed, seems to have remained intact from January 11th until February 5th.

On February 9th, the time of the third crisis, the fœtus probably escaped through a rent in the amnion, since it was found in the peritoneal cavity two days later at the time of the operation.

There was no hæmatocele formation.

The way in which implantation on to the omentum took place is analogous to that which occurs when, the rent having been below, the villi grow out between the layers of the broad ligament, but events proved that the risk of secondary rupture is greater when the sac is formed of omentum than when the envelope is composed of the broad ligament folds.

A clinical comparison between cases where the secondary gestation sac is situated in the peritoneal cavity and those where it is placed between the layers of the broad ligament is attempted. Attention is drawn to the peculiar mode of closure of the ruptured tube.

The different routes by which the fœtus may find its way into the abdominal cavity and continue to grow are discussed.

The patient was first seen by Dr. Marshall, of Twickenham, on December 31st, 1902, when she gave the history of having miscarried on December 27th after having had amenorrhœa since the end of October. There was then no sanguineous discharge, and the os uteri was closed. The patient complained of pain and tenderness in the left hypochondrium, but there was no swelling to be felt.

On January 11th, 1903, the patient's condition became critical; there was intense pain in the left hypochondrium, but no abnormality was found on vaginal examination. She had every appearance of a woman about to die, but Dr. Marshall was unable to determine whether from strangulation of the bowel or from internal hæmorrhage. Next day she improved, and dulness was found to the left of the mid-line near the umbilicus, but no tumour was discoverable.

On January 20th a swelling was detected in the left

ovarian region; the uterus was found to be enlarged; pyosalpinx was then diagnosed.

On February 5th the patient again became profoundly collapsed, and suffered severe abdominal pain; from this she partially rallied, and on February 7th was removed to the St. John's Hospital. Two days afterwards Dr. Marshall diagnosed extra-uterine gestation. On the evening of February 9th the patient was once more severely collapsed, and was with difficulty kept alive, but the critical symptoms abated somewhat, and she was seen by Dr. Routh the next day (February 11th).

Remarks by Dr. Routh.—"When I first saw the patient she was ashy pale; the pulse was feeble, with a frequency of 140; the temperature was 100° F. The left side of the abdomen was tender, and occupied by a resonant elastic swelling extending to the mid-line and reaching from the border of the ribs to a hand's breadth above Poupart's ligament. *Per vaginam* the uterus was found retroverted, enlarged, and somewhat fixed. There was no evidence of extravasation of blood either in the broad ligament or in the pouch of Douglas. It was evident that the patient had had four distinct attacks of internal hæmorrhage, and it was possible that the supposed abortion on December 27th was really the passage of a uterine decidua. Against the diagnosis of any form of extra-uterine gestation was the fact that, with the exception of a slight hæmorrhage on December 27th, she had had no loss of blood from the end of October to February 11th. The definite development of an abdominal tumour, however, made the diagnosis of a partially encysted hæmorrhage, due to tubal rupture, most probable; so, with Dr. Marshall's aid, I opened the abdomen at once. Immediately beneath the incision the omentum was found ballooned out by free subjacent blood, which welled up as soon as it (the omentum) was drawn aside. The fœtus then appeared in the wound, still attached by its cord to the placenta. Free hæmorrhage was taking place from the bottom of the pelvis. I traced the cord to a large ruptured amniotic

sac and placenta, which latter was almost entirely detached, but was still broadly adherent to omentum and to the left broad ligament in two places; these attachments I rapidly clamped off, and I then removed the placenta. It was evident that the placenta had been recently separated from the left broad ligament and from part of the rectum and side of the brim of the pelvis, as blood was coming from all these places. Finding that bleeding was going on from so large a surface, and that it was a general oozing and not arterial or venous hæmorrhage from any definite spots, and that it was impossible to stop it by ligature, I passed down into the pelvis a "petticoat" of iodoform gauze, filling this with the same material, and so arrested the bleeding. As the patient was then pulseless I filled up the abdomen with saline solution, and at the same time gave two pints *per rectum* through a long flexible tube. I then rapidly closed the abdomen in two layers, except where the gauze issued at the lower end of the incision. The patient's pulse rapidly improved, and recovery seemed possible.

"I subsequently heard, however, that severe pain and uncontrollable vomiting came on soon after the effects of the anæsthetic had passed off, and that she died twenty-four hours after the operation. Nine hours after the operation her pulse and respiration were still feeble, and her sickness was worse, but the pain was less. Twelve hours after operation she was very exhausted, and neither the stomach nor rectum could retain nutriment. Morphia was now administered, and for a time the patient dozed, but during the night she became more collapsed, and died, as above stated, twenty-four hours after the operation. Dr. Marshall was of opinion that the bleeding recurred during the night, probably induced by the vomiting, which he attributed to the anæsthetic (ether), though it was possible that it was due to the irritating effect of the gauze plug in the true pelvis."

The specimen consists of omentum, placental tissue, amniotic sac, and fœtus. The fœtus corresponds with a four months' gestation; it belongs to the male sex, and

measures 5·6 inches, or 14 cm. The umbilical cord is divided, with two inches attached to the fœtus and the remainder adherent to the edge of the amnion; its insertion is velamentous. The placenta, with adherent omentum, measures 13 × 11 cm. The amniotic sac is completely hidden, being overlaid in front by infiltrated omentum in its upper half, and below by dark blue and chocolate-coloured blood-clot. Behind the sac lie the chorionic tufts of the placenta embedded in blood-clot for the most part, but the villi are seen as bare cotyledons in places where they were adherent to adjacent structures prior to removal. The whole mass is of a flattened ovoid shape with its long axis in the transverse direction. At the lower extremity of the ovoid is seen—on the inner side—the cut end of the Fallopian tube, at the outer side the free ampullary tubal extremity. This latter measures 5 cm. in length; it is pervious for the outer 3 cm., and is very much altered in shape, being widened out like a spatula; whilst in its inner 2 cm. it is reduced to a thin fibrous cord with about half the diameter of the normal tube. Between the uterine cut end and the free ampullary extremity the tube is lost to view, being hidden by blood-clot in front and by placental tissue behind. On deflecting the lamina of blood-clot from the front and passing a bristle through the cut uterine end of the tube, the latter is seen to be deficient on its upper aspect for the space of 5 cm. Here the anterior wall is expanded out as a thin sheath on the deep surface of the deflected clot. Where the upper tube wall is deficient, the anterior wall lies in apposition to the amniotic sac, and to the naked eye the thinned-out tubal wall appears to fuse behind with the placental tissue at the line of attachment of the amnion. At one spot on the front of the mass, situated below the limit of adherent omentum and above the line of the tube, the blood-clot, which alone overlies the amnial sac at this point, is very thin and is paler than the rest. Here the clot has given way, leaving an irregular space through which the fœtus escaped. There is no attempt at hæmatocele formation,

and the explanation which suggests itself to account for such an ectopic fœtation is that the tube ruptured through its peritoneal surface, and, owing to the proximity of omentum, the extruded villi got an immediate attachment thereto. By subsequent tubal contraction a gradual transplantation of the placenta occurred, similar to that which takes place between the layers of the broad ligament, the omentum doing duty, so to speak, for the broad ligament in this instance, by aiding to shut off the general peritoneal cavity and limiting the space for effusion of blood. In this way a secondary gestation sac was formed, which ultimately burst through its thinnest point, *i. e.* at the point on the front where the omentum, if present at all, is too thin to be detected, on or beneath the old blood-clot, which at this spot appears to be the only covering the amniotic sac had.

The interest in this specimen lies in the manner in which the abdominal implantation of the gestation sac has been brought about. By dissection and microscopical examination it is clearly shown to be an example of secondary abdominal pregnancy. Sections of the tube wall, where the latter is attached to the amnion, show that it is invaded by chorionic villi which mark the site of the primary embedding of the impregnated ovum in the tube. The rupture occurred in the early weeks, and was not fatal. The eroding villi crept out and at once gained omental attachments without ever losing their hold on the tube, and thus at no time was the fœtus cut off from its nutritive supply. The villi subsequently acquired visceral attachments to the rectum, and also to the peritoneum forming the posterior layer of the broad ligament. The fœtus remained alive until its escape through the large rectangular tear in the secondary gestation sac, which took place just before the operation. That the sac should have ruptured when it did was probably due to the large share taken by the omentum in the formation of the upper and front aspects of the secondary gestation sac.

Until Lawson Tait made the important assertion in

1888 that every aberrant gestation starts in the tube, all abdominal pregnancies recorded in the 'Transactions' of the Obstetrical Society, and elsewhere, were regarded as primary, and little or no trouble was taken to investigate the state of the Fallopian tubes—sometimes for the reason that the placenta covered in the true pelvis at the time of operation "like the lid of a pot," as in Jessop's often-recorded case, where, since the life of the patient was spared, no opportunity was afforded of examining the structures deep to the placenta. More often, however, the investigation of the tubes was overlooked because it was not suspected that the impregnated ovum had reached as far as the oviduct. At the present time there are but a few observers who still believe in the existence of primary abdominal pregnancy; respecting this belief more will be said later on. It is sufficient to say now that the majority of pathologists regard the presence of the ovum in the peritoneal cavity as a secondary occurrence. It is nevertheless noteworthy that authorities differ as to the way in which the condition is brought about. Bland-Sutton states that when a living embryo is discovered in the abdominal cavity, it has found its way thither owing to secondary intra-peritoneal rupture of a broad ligament gestation sac. Tait, on the other hand, previously stated that "what had been called abdominal pregnancies are clearly exceptional cases, where primary tubal rupture at the end of the third month has not proved fatal; where the extruded placenta has made for itself visceral attachments wherever it has touched." This specimen is a perfect example of the process so well described by Tait. In comparison with most abdominal gestation sacs this one is small, and consequently the tubal condition can be easily studied. Where the case has gone to term it cannot be expected that the deep-lying structures, such as the adnexa and tube, can be studied to advantage.

The ruptured tube itself presents several points of special interest. At its cut uterine end it is complete;

then it is deficient above for the space of five centimetres, the amnial sac appearing to dip into the rent in the tube wall. External to the rent, the tube first assumes the appearance of a thin solid fibrous cord, whilst its terminal three centimetres are again pervious, the ostium abdominale opening at the base of a structure resembling a partially expanded lotus leaf. The closure of the gravid tube was not effected at the abdominal ostium, as is usual prior to rupture; the obliteration of the lumen is 3 cm. from that point. This closure of the canal has been brought about in a most unusual way. The tube looks as if it had suffered circumferential constriction by a cord or ligature. For this phenomenon I have no explanation to offer; as far as my own observations go it is unique.

Returning to the question as to the manner in which a living fœtus finds its way into the peritoneal cavity and continues to develop, there is no doubt that it can do, and usually does so, by rupture of a broad ligament gestation sac in which the fœtus happens to be uppermost and the placenta firmly attached below. It is equally certain, from a study of Dr. Routh's specimen, that the ovum may escape directly into the cœlomic space through a rent in the peritoneal coat of the tube. When a secondary abdominal pregnancy is brought about in this way, it means that the fœtus finds itself in the peritoneum at a much earlier date than in cases where it passed first of all into the broad ligament and from thence into the abdomen. Its exit from the tube could not be postponed beyond the twelfth week, but it may remain within an intra-ligamentary sac until the fourth or fifth month. In the latter case the placental attachment at the bottom of the broad ligament is not disturbed, whereas in the former the placenta has to make its own implantation to the structures nearest the rent. Such attachments will be precarious, and the life of the fœtus will be in constant danger; therefore it is unlikely that such a secondary abdominal pregnancy will go to term, or, indeed, will advance beyond the fourth month, without secondary

rupture and the need for operation. The two cases will present widely different clinical features, especially with regard to physical examination. The intra-ligamentary pregnancy will occupy its own half, or more, of the pelvis, depress the vaginal roof, and displace the uterus to the opposite side, and after rupture the child can, as a rule, be distinctly felt in the abdominal cavity. In the case of primary intra-peritoneal rupture where the fœtus continues to live within the abdominal cavity, the swelling may at first be taken for a para- or peri-tubal hæmatocele, inasmuch as the tube and gestation sac will be in contact; but as the placenta continues to grow the tumour may rise into the abdomen, so as to occupy any position on its own side of the mid-line (*vide* Dr. Routh's note). On vaginal examination the fornices will be free, and the position of the uterus not necessarily disturbed or perhaps retroverted. I am disposed to think such cases as these are—to use Tait's expression—"exceptional;" at any rate, there is no similar instance among the many reported cases of abdominal pregnancy found in the 'Transactions' of this Society.

In addition to the above two different ways in which secondary abdominal pregnancy may occur, there is yet a possible third means by which it can be brought about. From a recent study of a case of incomplete tubal abortion I was led to the belief that this accident may account for a secondary gestation sac in the peritoneum. In this case, already published in the fasciculus of the 'Transactions' for the first half of this year, I found the amniotic sac containing a small crescentic body (? fœtus), lying outside the dilated ostium, free in a smooth-walled cavity. This cavity was formed partly by adhesions and partly by the posterior layer of the broad ligament. In addition to the amniotic sac it contained the ovary. There was no sign of hæmorrhage into this sac. The placenta was still in the tube situated five centimetres from the ostium, and the umbilical cord connected it with the extruded and unruptured amnion. Had the placenta

been attached to the ampulla instead of to the narrower part of the tube, the partial abortion would have given a chance for villi to grow along the fimbriæ, and from thence to the neighbouring peritoneum, without at any time being sufficiently separated from the original site of implantation to cause fœtal death. There are therefore three possible ways in which second abdominal pregnancy may occur :

1. As the result of rupture of a broad ligament gestation sac.

2. From primary rupture of the tube which has not proved fatal.

3. From incomplete abortion of an ampulla pregnancy.

The question remains : Is the condition ever primary ? Can an ovum become impregnated before entering the oviduct ? and can it, after conception, graft itself and grow on the peritoneum ? We do not know the site where normal impregnation takes place, but we do know that ovarian gestation is a fact, and that therefore it is not necessary for the ovum to have reached the tube in order to become gravid. The element of doubt appears as soon as we begin to discuss the chance of a fertilised ovum being able to exist and develop in the free peritoneal cavity. Whilst not prepared to deny the possibility of primary abdominal pregnancy, I cannot persuade myself that any case so described is genuine. In the 'Obstet. Soc. Trans.,' vol. xxxiii, Doran gives an analysis of all the best reported cases of supposed primary peritoneal implantation of the ovum up to 1893, and the result of such scrutiny went to show that in no single instance was there proof that such a condition had been demonstrated. In 1896 Dr. Galabin showed a specimen of extra-uterine gestation at this Society, which, to my mind, is the most probable example of primary abdominal pregnancy yet published. It was referred to a special pathological committee, which suggested three alternative explanations : —(1) that it might be the result of a tubal abortion, with fresh implantation of the ovum ; (2) that it was possibly

an ovarian pregnancy; (3) that more probably it was an example of primary abdominal (intra-peritoneal) gestation. I do not think an ovum would be capable of living after sudden complete tubal abortion, and quite agree with Dr. Galabin's remarks in the 'British Medical Journal' (March, 1903), where he says that it is much more likely that a fresh and undamaged ovum would acquire attachments to the peritoneum than an ovum injured by expulsion from the tube should do so. The other alternative, that of ovarian gestation, I cannot so readily dismiss from my mind, especially as the committee leave us in doubt as to the relation of the ovary to the gestation sac, using in the description the words "what appears to be the right ovary." If ovarian gestation could have been more satisfactorily excluded I should have regarded the case as proved. Dr. Galabin lays great stress on the microscopical features of the sac wall, which, from its highly organised state, he thinks could not have been lymph, but an investment corresponding to a decidua reflexa, or, as we should now say, a capsularis formed of peritoneum. I have not seen the sections, but the committee seemed to be of the opinion that the wall contained unstriped muscle-fibres, which means that it had burrowed into the broad ligament; and this favours the ovarian theory and puts abdominal pregnancy out of court.

The doubtful points in this case seem to be (1) the relation of the ovary to the sac; (2) the nature of the sac wall. Exclude the ovary and prove that the capsularis is nothing more than peritoneum, and we have an undoubted case of primary abdominal gestation.

In the 'Centralblatt für Gynäkologie' for January, 1903, Witthauer records a case under the heading "Primary Abdominal Pregnancy." This has been commented on in the 'British Medical Journal' by Mr. Doran and Dr. Galabin, both writers accepting it as genuine. But, as I pointed out in an abstract of the case published in the 'Journal of Obstetrics and Gynæcology of the British Empire,' vol. iii, No. 3, p. 262, no information of the

state of the left tube is given, and serial sections of the right tube were not made, so that the essential proof that the implantation was primary is wanting; indeed, the case is not nearly so carefully worked out as Dr. Galabin's.

Leiserung, as quoted by Witthauer, described an embryo sac as lying close to the sacrum, embedded in omentum, in the case of a cat. The ovaries and tubal ostia were proved to be healthy, but the omentum was adherent to the right tube at its uterine end, and on opening up the tube in this situation an old cicatrix was found into which the omentum had been drawn and had become adherent. This was, therefore, not a primary abdominal pregnancy, but the result of a ruptured tubal gestation, with secondary encapsulation in the meshes of adjacent omentum.

Bruno Wolff, in 1902, demonstrated an ovum which he found in the left side of the peritoneal cavity of a bitch, from which some months previously he had removed 2 cm. of the right tube, and had sewn the cut ends together. Wolff believed this to be a case of primary abdominal pregnancy because of the intimate relations of the omentum to the ovum, but he could not, or did not, adduce any microscopical proof of his supposition.

In conclusion, the case which, to my mind, goes farther than any other in the matter of proving primary abdominal pregnancy to be a fact is that one already brought before the notice of this Society by Dr. Galabin.

Dr. Herman thought the Society was to be congratulated upon the papers read before it that evening, the authors of which deserved its thanks. He thought Mr. Malcolm had treated the case he had related to the Society very wisely; and he agreed with Mr. Malcolm in his recommendation that operation should be performed without unnecessary delay in all similar cases. But Mr. Malcolm went further than that. He extended his recommendation of prompt operation to all cases of ectopic pregnancy in which the fœtus was living, whatever the period of pregnancy. In this he (Dr. Herman) could not agree with him. In the first half of ectopic pregnancy certain dangerous events were frequent—rupture of the tube or of the gestation sac, and their ulterior consequences. At this period the placenta was

small; its area was so limited that it could be satisfactorily dealt with. Even at this period, as Mr. Malcolm had shown, hæmorrhage often gave great trouble. But in the second half of ectopic pregnancy the conditions were different. The further the pregnancy went on, the more vascular was the placenta, so that bleeding was greater, and the larger was the area of the placenta, so that the difficulty of stopping bleeding was greater. Mr. Malcolm had quoted Dr. Champneys' compilation of cases made in 1887, and showing a mortality of 88 per cent. among cases of ectopic pregnancy operated upon at or near term while the fœtus was living. He (Dr. Herman) was not aware of any considerable number of cases published since which showed much reduction of that mortality. Before proceeding to this dangerous operation they should consider what would happen if the operation were not done. When the patient had reached the second half of ectopic pregnancy, the liability to rupture of the sac was a thing of the past. Dangerous accidents of any kind were rare in the second half of ectopic pregnancy. When the patient got to term, spurious labour came on; and at this time the patient was in practically no danger. Then the child died, the liquor amnii was absorbed, and finally, after an interval the length of which we as yet knew not exactly, the placenta became thrombosed. The patient was, as a rule, in no danger until suppuration took place; and the cases collected by Parry showed that the time at which suppuration began varied from a month to two years, and was upon the average about six months. Suppuration might not occur at all, and the patient remain in good health to the end of a long life, subject only to the inconvenience of an enlarged abdomen. She was in no danger until suppuration began, and if operation were postponed until this date the placenta would almost certainly be thrombosed, and it could then be easily peeled off without hæmorrhage. He had exhibited to the Society ('Obstet. Soc. Trans.,' vol. xxviii, p. 141) specimens from a case illustrating this. He therefore could not agree with Mr. Malcolm that immediate operation should be done in the second half of ectopic pregnancy with a living child; he thought that by far the safer course was to wait until symptoms of suppuration had begun.

Dr. Victor Bonney was interested in the papers he had listened to, because within the last few months two similar cases had come under his own notice. In the first a two months' tubal gestation had ruptured into the broad ligament and formed a large sac, into which bleeding had occurred during a period of six weeks. In the second case the patient, after missing two periods, was suddenly seized with severe pain, accompanied by some loss, and followed by the passage of a uterine cast. The bleeding was slight, and was followed by another two months' amenorrhœa. An examination four months after the beginning

of pregnancy revealed all the signs of a typical extra-uterine gestation; indeed, the placenta could be felt in the pouch of Douglas by vaginal examination. Both these two patients were subjected to operation by Mr. Bland-Sutton, and an enormous retro-peritoneal collection of blood was found in the first, whilst from the second a perfect and unruptured secondary abdominal sac containing a living fœtus of between four and five months was removed with a successful result. In this latter case the removal of the placenta was followed by very free bleeding. He considered that on the question of the advisability or not of removing the placenta at once in cases such as this last one, there were two main points to consider: firstly, the period to which pregnancy had advanced; and secondly, the mode of placental attachment in the particular case under consideration.

Dr. Amand Routh said that the case so ably commented upon by Dr. Lockyer had proved a very disappointing one. The patient had had three attacks of collapse from internal hæmorrhage, with nine weeks' amenorrhœa. The diagnosis of extra-uterine gestation was made from the history and the physical signs. It was assumed that it was a secondary intra-peritoneal pregnancy after tubal rupture, owing to the tumour being entirely distinct from the retroverted uterus. At the operation the placenta was found to be already separated on its central maternal surface, and adherent at several parts of its circumference to omentum and broad ligament. After its removal there was a profuse general capillary hæmorrhage from all the underlying structures. This was at once arrested by firmly applied gauze pressure. As the anæsthesia passed off uncontrollable vomiting ensued, and she died of exhaustion in twenty-four hours. Dr. Routh asked for the experience of those present regarding the persistent amenorrhœa in this case and the one mentioned by Dr. Victor Bonney, instead of the usual metrorrhagia. Was it peculiar to these cases of secondary intra-peritoneal pregnancy?

Dr. Heywood Smith wished to ask Mr. Malcolm whether in his case he had used adrenalin for the arrest of the hæmorrhage, as he (Dr. Smith) had found both it and tincture of matico of great service in such cases of oozing after separation of adhesions.

Mr. Malcolm, in reply to Dr. Herman, said that if an operation is performed, as advised in his paper, whenever an extra-uterine fœtation is diagnosed and the fœtus is believed to be alive, undoubtedly cases would be operated on which would get well without operation—as, for instance, such a case as that recorded by Mr. R. W. Watkins in the eighth volume of the 'Transactions' (p. 106), in which a patient died at the age of seventy-four, having carried the remains of a full-time extra-uterine fœtation in her abdomen for forty-three years. At the *post-mortem* examination the abnormal parts were very slightly

adherent to the maternal tissues. But Mr. Malcolm contended that if the operation proved very difficult and dangerous during the life of the fœtus, it would be more dangerous if delayed until suppuration took place, or if it had to be performed for severe hæmorrhage. He allowed that different views might be taken, but it seemed to him that under all circumstances delay in operating was likely to give occasion for the development of more dangerous conditions. In the cases referred to by the second speaker it had been possible to seize the torn parts with forceps, when of course the arrest of hæmorrhage was comparatively easy. In Dr. Routh's case the great difficulty was that it was impossible to seize the bleeding tissues in forceps, and there was no point of counter-pressure as in a case where an extra-peritoneal sac existed and could be packed firmly. With regard to the development of a true abdominal pregnancy arising outside the tube and outside the ovary, Mr. Malcolm thought this was quite possible. All that was required for the development of the ovum seemed to be a free supply of blood, and that could be had from the peritoneum. Mr. Malcolm thought that Dr. Taylor's deductions from observations made during an operation performed in 1896, and recorded in the Society's 'Transactions,' explained the method of development of extra-uterine fœtations most satisfactorily. Dr. Taylor taught that so long as the amnion did not rupture, and the supply of blood to the placenta was sufficient, the fœtus in the amnion might develop anywhere to full term.

NOVEMBER 4TH, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—30 Fellows and 5 visitors.

Books were presented by the Royal Medical and Chirurgical Society, Edinburgh Obstetrical Society, the Copenhagen Medical Society, and the Westminster Hospital Staff.

The following gentlemen were elected Fellows of the Society:—A. M. Rose, M.B., Ch.B., D.H.P.Aber.; Percival G. A. Bott, L.R.C.P.; Arthur Holbrook Nott, M.B.Durh., Major I.M.S.

OVARIAN CYST WHICH HAD MADE ITS WAY BETWEEN THE LAYERS OF THE MESOSIGMOID, BOTH BROAD LIGAMENTS, AND THE MESOCÆCUM.

Shown by Dr. W. H. B. BROOK (Lincoln).

E. B—, 56, nullipara, admitted into the Lincoln County Hospital on April 6th, 1903, on account of an abdominal tumour which she had noticed since the previous December. On examination the patient presented all the signs of an ordinary ovarian cystoma, which appeared to fill the whole abdomen. *Per vaginam* the uterus was freely movable, and appeared natural. On April 11th the tumour was

removed; it proved to be an ovarian cystoma, containing 23 pints of the typical thick ovarian fluid in one cyst with two other small loculi.

There were no peritoneal adhesions, but the base of the cyst, which appeared to have originated in the left ovary, extended between the layers of the broad ligament from one side of the pelvis to the other, passing behind and above the uterus, which it entirely concealed. The peritoneum covering the front of the tumour was reflected on to the bladder, that covering the back of the tumour on to the rectum; and the cervix uteri could be felt through both the anterior and posterior reflection, but it was impossible to make out the body or fundus of the uterus, which was lost in the base of the tumour.

The cyst had separated the peritoneum from the sigmoid and the cæcum, so that they were in direct relation with the cyst wall, over which spread two large leashes of vessels, from the mesosigmoid and mesocæcum. The vermiform appendix lay stretched out on the posterior wall of the cyst.

As it was found to be impossible to completely enucleate the tumour, its wall was cut through near the base, the two leashes of vessels having been ligatured and the greater part of the cyst removed, that part which was left being sutured to the abdominal incision and drained.

Whilst this was being done it was seen that the base of the tumour was in immediate relation with the fundus and posterior wall of the uterus, from which it had stripped the peritoneum. A subperitoneal fibroid growing from the fundus uteri of the size of an orange projected into the interior of the cyst; this was cut off and caused no trouble.

The patient made an uneventful recovery, and left the hospital on July 17th with the sinus healed.

The section of the cyst wall shows the Fallopian tube cut somewhat longitudinally, its lumen containing a few flattened-out rugæ, mostly devoid of epithelium. The greater part of the section consists of unstriped muscle arranged in bundles cut across and obliquely.

Dr. Lewers said that, if he had followed the description of the operation rightly, it appeared that a portion of the ovarian cyst had been left in the pelvis. He thought it should be clearly borne in mind that no ovariotomy could be regarded as satisfactory unless the whole of the cyst were removed. He had seen a considerable number of cases of ovarian tumour burrowing between the layers of the broad ligament, and raising the pelvic peritoneum and peritoneum of the adjacent iliac fossa in an upward direction—carrying the sigmoid flexure upwards as high as the umbilicus, for instance. In fact, he had such a case at the present time under his care in the London Hospital. The removal of the deeper (pelvic) portion of such cysts required great care, more especially in order to avoid injury to the ureter. In the case he referred to he had dissected some three or four inches of the left ureter from the base of the cyst, and he had met with many similar cases. With care, however, it was, he believed, always possible to remove cysts of this kind completely; and it was many years since he himself had failed to remove completely any ovarian cyst on which he had operated. In some of these cases it was necessary to remove the body of the uterus as well, owing to its intimate fusion with the cyst wall.

Mr. Malcolm suggested that there might have been two ovarian tumours, which had become adherent behind the uterus. In that case it would be easy to understand how the sigmoid flexure and the cæcum were both raised out of their places.

Dr. Brook, in reply, said that with respect to the danger of injury to the ureter mentioned by Dr. Lewers, this was in his mind at the time of the operation, and the difficulty of removing the base of the cyst without causing this injury led him to treat it in the way he had done. As Mr. Targett had pointed out, it certainly was difficult to understand how the cyst had come to be in the relation with the fundus of the uterus which it occupied, and it was in the hope that some light might be thrown upon this that the case was brought forward. The cyst was undoubtedly a cyst of one ovary.

FŒTUS COMPRESSUS.

Shown by Mr. E. A. Barton.

Mr. E. A. Barton, in showing a specimen of fœtus compressus, pointed out that the ovum was passed ten

hours after the normal delivery of an eight-months' living child. The woman had married twice, by her first husband having three single children, by the second three sets of twins, besides a single child and a miscarriage. There was no history of multiple pregnancy on either side, or syphilis. The fœtus measured 7 cm. by 3 cm., but was only 0·5 cm. thick, and appears macerated.

The cord was 10 cm. long by 0·1 cm. thick.

The placenta was 7·5 cm. by 6·4 cm., but only 1·75 cm. thick, and appeared normal to the naked eye, though the ovum had remained *in utero* five months. On section the placenta showed marked degeneration of chorionic villi, and also in a less degree the decidual cells.

The President said that similar cases of "fœtus compressus" had long been known as "fœtus papyraceus." There was an excellent representation, he remembered, in Cruveilhier's 'Pathological Plates.' They occurred more frequently in cases of uniovular twins, and were interesting to the lay mind in connection with the question of superfecundation and superfœtation; also the length of time they were occasionally retained within the uterus. He had recently known of one expelled in the form of a mole, five weeks after the birth of a full-term child.

REPEATED ECTOPIC GESTATION IN THE SAME PATIENT.

Shown by Dr. A. H. N. Lewers.

Dr. Lewers said that the patient from whom the specimen shown was removed first came under his observation as an emergency case on September 6th, 1901, when she was admitted into the London Hospital with all the symptoms and signs of a ruptured extra-uterine

gestation. The patient at that time was twenty-seven years of age, had been married seven years, and had had two children, the last four years previously. She was so much collapsed that it was judged advisable to perform intra-venous injection of salt solution while he was doing the abdominal section. On that occasion there was a large quantity of blood in the peritoneum, and a fœtus about 3½ inches in length was found. The ectopic pregnancy had been on the left side. The patient remained very weak for some time, but ultimately made a good recovery, and he heard nothing of her till September 30th, 1903. On that date she was brought up to the London Hospital again with the same symptoms and signs as on the previous occasion. Abdominal section was done, and it was found that there had been a tubal pregnancy on the right side, which had ruptured. The ovum (the specimen shown) was completely expelled, and lay in Douglas's pouch surrounded by a mass of clot. On opening the amniotic sac a fœtus about three quarters of an inch long was found. The patient made a good recovery after the second operation.

Dr. Lewers referred to a paper he had read before the Obstetrical Society in November, 1900 ('Obstet. Soc. Trans.,' vol. xlii, p. 324), on a case of repeated ectopic gestation in the same patient. In that case, as in the one brought forward this evening, abdominal section had been required on each occasion. In the former case an interval of six years had elapsed between the pregnancies; in the present case there was an interval of only two years. In his former paper Dr. Lewers had referred to Dr. Haig Ferguson's paper on this subject, in which fourteen cases of repeated ectopic gestation in the same patient, requiring laparotomy on each occasion, had been collected. He considered that cases of repeated ectopic pregnancy in the same patient, where the symptoms were each time so severe as to require abdominal section, were actually rare. Cases where the diagnosis rested on clinical evidence without operation or confirmation by *post-mortem* exa-

mination should, he thought, be placed in a separate category.

Dr. PETER HORROCKS related details of a case in his own practice in which abdominal section was done for ruptured tubal gestation with great internal hæmorrhage and collapse. He told the husband that it was exceedingly improbable that his wife would ever have such a thing again. But she developed a hæmatocele some year or two later, and this was opened *per vaginam*, and the Clinical Research Association reported that chorionic villi were found in the specimen (clots which were removed from the retro-uterine swelling), showing that it was another extra-uterine gestation. In the light of this and other recorded cases, one could hardly look upon this condition occurring twice in the same individual as being very rare; and when one came to think of the common cause of extra-uterine gestation, namely, some obstruction in the tube preventing the ovum reaching the uterine cavity, and particularly as this cause was generally bilateral, it was perhaps not to be wondered at.

Dr. CULLINGWORTH said it was probable that the occurrence of repeated tubal gestation in the same patient was less rare than had been supposed. Dr. Lewers had alluded to a series of such cases, and a further series had been published since. Dr. Herman had published a case, the earliest, he believed, that had been recorded. He himself had met with an instance in his own practice. On September 9th, 1898, he removed the right Fallopian tube from a patient with hæmatosalpinx, due (as appeared almost certain from the clinical evidence) to an abortive tubal gestation. Five months later the patient presented herself with symptoms and physical signs pointing to a tubal abortion on the other side. The abdomen was thereupon reopened on February 16th, 1899, and the left tube removed. Its condition left practically no doubt as to there having been an abortive gestation. Its outer end was dilated by blood-clot and surrounded by a hæmatocele, with which it was in direct communication (see 'St. Thomas's Hospital Reports,' vol. xxvii for 1898, pp. 242 and 243, and vol. xxviii for 1899, pp. 262 and 263).

Mr. MALCOLM said that in operating for an extra-uterine pregnancy he had seen a small nodule, apparently in the tube, opposite to that on which he was operating. The patient had a history which warranted the belief that she had developed an extra-uterine fœtation some years earlier, from which she had made a perfect recovery. There was no reason why in such conditions a patient should not develop a third ectopic gestation.

Dr. HERMAN believed that he had been the first to record the repeated occurrence of ectopic pregnancy in the same patient. From the frequency with which he had seen illnesses presenting

the symptoms and signs of pelvic hæmatocele, but ending in recovery without operation, occur more than once in the same patient, together with the cases in which the fact had been proved by operation, he believed the repeated occurrence of ectopic pregnancy was common.

CASE OF EXTRA-UTERINE GESTATION; DEATH AFTER OPERATION FROM SEPTICÆMIA; REMARKS ON THE SIGNIFICANCE OF ADHESIONS OF THE WALL OF THE GESTATION SAC TO THE DEAD FŒTUS.

Shown by Mr. John D. Malcolm.

Mr. Malcolm showed a specimen of an extra-uterine fœtation removed from a patient whose history was as follows:—Her age was twenty-nine, and she had one child, aged eight years. Fourteen months after the birth of this child the patient complained of severe pain in the pelvis, which continued about a fortnight and gradually ceased under treatment by rest and vaginal douches. From that time onwards her health was good, her periods were never missed, and never more than a week late until April 10th of this year, when the advent of the period was delayed for nine days, and it then came on with extreme bearing-down pain. Only a trace of blood was lost, and a fortnight later there was a slight red discharge for a few days. In May and June the periods were missed. At the end of June the patient was confined to bed with pains which were attributed to a miscarriage by the doctor in attendance. He also said there was much inflammation, and the parts in the pelvis were very tender. After five days of severe pain "something" came away

from the vagina. It was not seen by a doctor, but it was declared to be a "miscarriage" by the woman who was acting as midwife. After this the health was better, but blood was lost from the vagina daily for nearly three months. The patient's abdomen enlarged so that her clothes had to be altered. In the middle of September "bits of flesh" escaped from the vagina for about a week, and the enlarged abdomen gradually diminished until the waist assumed its usual size. At this time there was severe pain on the left side of the lower part of the abdomen, in the pelvis, and down the left thigh.

The patient was admitted to the Samaritan Free Hospital early in October with a very painful rounded swelling behind and to the left of the uterus, rising above the brim of the pelvis and being apparently about five inches in diameter. It was closely attached to the uterus, which lay in front and to the right, and which, as measured by the round, was 2½ inches long. The temperature varied between 101° and 99·5° F. daily. Pain and fever gradually diminished, and at the end of three weeks the parts were not very tender to touch. The abnormal mass in the pelvis was, or appeared to be, smaller, and its outline was irregular and nodular.

Mr. Malcolm diagnosed an extra-uterine fœtation, and opened the abdomen on October 27th. The abnormal parts were everywhere adherent in the pelvis, and were covered in by a loop of adherent bowel and epiploic appendages in front. The bowel was tightly stretched over the most prominent part of the swelling, and the latter could be seen above and below the coil, so that it was doubtful in which direction the mesentery was attached. After a little enucleation it was found that the bowel was the sigmoid flexure pushed forward by the swelling. Its mesentery was very thin. The anterior part of the loop was so firmly attached that it could not be safely separated, but the abnormal tissues were easily broken down, and part of their capsule was left on the bowel. Except for this the sac and its contents seemed

to be completely enucleated, there being very little hæmorrhage. A dead fœtus, four to five months old, was found in the deeper part of the pelvis, but its exact relations were obscure, as the gestation sac was torn in the course of the enucleation. There was no liquor amnii, and no collection of fluid of any kind was evacuated. The middle of the loop of intestine which was detached from the front of the sac was completely separated from its attachments for about an inch of its length, its mesentery and the capsule of the fœtal sac being so intimately united that it was impossible to separate them. No attempt was made to remove the adherent adventitious membrane from this loop of the bowel. The lumen of the gut was not opened, and its wall did not appear to be very thin. After complete enucleation of the abnormal tissues the broad ligament was tied and divided without difficulty. The sigmoid flexure, when dropped into the pelvis, lay naturally over the greater part of the raw surface that had been exposed. It showed no evidence of deficient blood-supply. There was not much oozing, but there was a large surface from which the sac had been enucleated, and a drainage-tube was therefore placed in Douglas's pouch, its upper end being fixed in the usual way between the lips of the lower part of the wound in the abdominal wall.

The operation was finished before eleven o'clock a.m., and the wound was dressed at 9.30 p.m., when 3½ ounces of thick red fluid had escaped from the tube with some organised clots. The discharge was odourless and appeared healthy. The temperature was 100·2° F., the pulse was 112. At 4 a.m. next morning the temperature was 101·4°, and the pulse was 126. Three ounces of fluid had been collected from the tube, and a considerable quantity had escaped along the side of the tube. This discharge was more serous and paler than that removed at the first dressing, and it had an odour distinctly suggestive of fæcal contamination. Notwithstanding this the fluid appeared to be quite healthy serum, and it contained clots which as far as the eye could judge were undergoing normal organisa-

tion. The kidneys were acting well, but flatus was not passing from the bowel. A small enema caused great pain, and only led to the expulsion of a very little flatus. The temperature and pulse rose steadily. At 9.30 a.m. five ounces of thin serous fluid had been collected, and a great deal had escaped into the dressing. The odour of the discharge was more markedly suggestive of fæces than in the early morning, although its appearance and that of the clots found in it was healthy. The patient died about twenty-six hours after the operation. Permission to make a *post-mortem* examination was refused, so that it was not possible to make a statement of the conditions existing, but there seemed to be no doubt that death was due to septicæmia, and that this was due to the escape of infective matter from the bowel. The separation of the gut from part of its mesentery may have aided the escape of morbid products by reducing its vitality. It might have been better to have made a large opening into the vagina for drainage purposes in this case, but the parts at the time seemed so dry that there was some doubt as to the necessity for drainage of any kind. The question of resecting the damaged bowel also presented itself after the patient was dead, but it did not seem at the time of the operation that the circumstances warranted such a procedure. The possibility of its being required or advisable did not occur to the operator.

It seemed fairly certain that the child in this case was conceived early in April, that at the end of June a deciduous membrane was thrown off, and that the illness in the middle of September was associated with the death of the fœtus. At that time it appeared that a second deciduous membrane was expelled. This was the first occasion on which the speaker observed a re-development of the decidua in a case of extra-uterine fœtation, but Sir Halliday Croom had noted the fact that a second membrane is sometimes thrown off by the uterus.*

Mr. Malcolm thought that this case supported his con-

* 'Practitioner,' November, 1903.

tention, advanced at the last meeting of this Society, that every case of extra-uterine fœtation should be operated on as soon as it was diagnosed if the fœtus was believed to be alive. The chances were very great that, after the first few months of gestation, if the fœtus died it would find its way, by a suppurative process, through some mucous membrane, and would cause a more or less serious septic illness which, in many cases, nothing would cure. Mr. Malcolm had been lucky hitherto in not meeting with such cases in his own practice, and he had only had one fatality from an operation for extra-uterine fœtation before the one now recorded; but he had seen several cases, some of them absolutely hopeless, and the risks of hæmorrhage seemed to him less than those of sepsis. It seemed right, therefore, to anticipate the onset of septic mischief by immediate operation. Moreover in many recorded cases the placenta had been found quite easy to deal with. Doubtless occasionally an operation would be safer when the child was dead, or even when suppuration had taken place, but in the great majority of cases the patient gained nothing by waiting; on the contrary, she had the opportunity of developing conditions more serious than those already existing. Hence, unless there were very definite reasons in a particular case for postponing an operation, Mr. Malcolm urged that surgical treatment without unavoidable delay should be recommended whenever an extra-uterine fœtation was diagnosed in an advanced stage, or in an early stage if the fœtus was thought to be alive.

If the case under discussion had been operated on at the third month, or even before the febrile attack in September, the chances of success would, in his opinion, have been infinitely greater.

Description of the Specimen, and Remarks.

The specimen consisted of a sac which had been torn during the operation. It was formed of the left Fallopian tube, the left ovary, part of the broad ligament, and ad-

ventitious membranes. The tube was ruptured at its outer end, and the placenta, measuring about two inches across, was attached to the ruptured part. Close to the placenta, and partially underlying it, there was a solid rounded mass measuring nearly three inches in diameter, which appeared to be old blood-clot. It lay behind the broad ligament, and was probably effused into the space between the chorion and the amnion. The fœtus, which measured a little over five inches in length, was attached to the placenta by a long cord. The point of interest which led to the exhibition of the specimen was the fact that the abdomen of the fœtus and parts of the right forearm were intimately attached to part of the adventitious tissue forming the gestation sac.

A similar condition was described by Dr. Cullingworth in the thirtieth volume of this Society's 'Transactions,' p. 483. In his case the fœtus had died at the eighth month of gestation, and was successfully removed eight months later. It was free from odour, there was no liquor amnii, and the fœtal skin "had become intimately adherent to the cyst wall wherever it was in direct contact with it." Another case was published by the late Mr. Lawson Tait in the thirty-fourth volume of our 'Transactions,' p. 192. In that case a fully developed child was successfully removed five months after term. There was no liquor amnii, and there was no evidence of decomposition. All the upper surface of the child "had become adherent to the omentum and to the anterior parietal peritoneum," the adhesions being "really very dense."

Commenting on this, Mr. Tait wrote that "a very singular cause of speculation arises from the creation of dense adhesions between the living tissues of the parietal peritoneum and what we must regard as the practically dead tissues of the fœtus. It is difficult to imagine that such an essentially vital process could occur between living tissues and tissues absolutely dead. Something like an illustration of this occurs in Hamilton's sponge-grafting experiments, but there it becomes perfectly certain that it is not a real adhesion, but simply a bracing together of

the really living and the really dead tissues by the penetration of the sponge cavities by long fingers of living cell tissue, so that the sponge becomes a sort of trelliswork. There is not any real union, but in this case the union must have been absolutely continuous and cellular. This intra-peritoneal child was, of course, dead as an individual, and dead so far as its physical functions were concerned, although it could not be regarded as absolutely dead tissue. Some kind of low form of vital action must have been going on in it—a conclusion which I think is established by the fact of its resisting decomposition and the formation of the adhesions."

It was well known, however, that granulation tissue might become very intimately adherent with dead tissue, as in the case of a piece of cloth in a wound, or a stone fixed by granulations in a kidney, or a piece of aseptic dead tissue placed in the peritoneal cavity. It seemed to Mr. Malcolm that in the two cases he cited, and in the case from which the specimen shown was taken, the fœtuses were absolutely dead in every sense, and that Mr. Tait's suggestion with regard to sponge grafting involved the correct explanation of the condition observed, although he (Mr. Tait) brought it forward only to set it aside. The healthy chorion appeared to be capable of living in and absorbing nourishment from the connective tissue wherever it might be placed, and the amnion was united to the chorion by connective tissue. So long as the amnion was living, therefore, it absorbed nourishment from any connective tissue with which it was in contact, and formed a secreting surface which protected the fœtus from the tissues. But when the amnion was dead the surface to which it was attached was left, so to speak, bare, and, as in the case of a surgical wound, it was necessary that it should either unite itself with and absorb dead structures with which it was in contact, if their absorption was possible, or it must form an excreting surface. If it excreted, an abscess or a collection of serum would develop. The latter condition, a formation of serum,

had not, the speaker thought, been described, so that if an abscess did not form the alternative seemed to be that the surface outside the amnion must gradually absorb that membrane after its death. When the amnion was gone the tissues would seize upon and absorb the fœtus just as a piece of aseptic silk was absorbed, or a piece of aseptic sponge became covered in by granulations. In course of time the living tissues would figuratively eat up the dead, or as much of them as was capable of absorption, unless some condition intervened to arrest the process. Thus the condition shown in this specimen seemed to explain the mode of absorption of an extra-uterine fœtation.

In a few rare cases the form of the soft parts of a full-time fœtus was preserved intact. The speaker suggested that, as both skin and amnion were excreting surfaces, if the greater part of the latter preserved some of its vitality for a time, the subjacent parts might be prevented from coming in contact with the fœtus until its tissues had undergone sufficient modification to make its absorption impossible. There seemed to be no doubt that such changes did occasionally occur.

ACUTE CONTAGIOUS PEMPHIGUS IN THE NEWBORN.

By George J. Maguire, M.B., B.A.O.

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(*Abstract.*)

Authorities are quoted to show that infantile pemphigus other than syphilitic, though known to occur, is rare, especially in this country.

After stating the constitution of the Charity in the practice of which the epidemic dealt with occurred, and after giving data as to the carrying on of the work up to the time of the outbreak of this epidemic, the period over which it extended is recorded, the number of deliveries during this period being twenty, the number of infants affected with pemphigus being eighteen, and the number of deaths eight.

The clinical symptoms in the first case seen are described, followed by detailed notes of the history and symptoms in each case, with the result; and an abstract in tabular form is appended.

It is concluded that the cases arose from a common contagion of septic origin (its source, however, unknown) conveyed from case to case by a certain midwife, the probable method of conveyance being given. The contagiousness of the affection is proved, and the number of cases infected from each infant is given.

After quoting a paper by Bulloch in the 'British Journal of Dermatology' for 1896, which contains an account of the micro-organisms found in previous epidemics of pemphigus

neonatorum, there is given the result of the bacteriological examination of serum from two of the cases, the pathogenic germ isolated being the *Staphylococcus pyogenes aureus.*

The incubation period is then inquired into, and an endeavour made to fix the time required—(*a*) for the development of a bulla; (*b*) for the earliest signs of the skin lesion. This last is then described in detail, the method of formation and spread of the bullæ being given, with the appearance presented after their rupture, and their course—(*a*) in the recovering cases, (*b*) in the fatal cases; followed by a short account of the microscopic appearances of sections of an old and a new bulla.

The additional symptoms in the fatal cases are detailed, the condition of the umbilicus and abdomen being particularly noticed. It is concluded that these symptoms were those of an acute toxæmia, the infection having gained entrance through the unhealed umbilicus.

Notes of the autopsies on Cases 10 and 11 are given, after which the therapeutic measures are discussed, and a suggested line of treatment in future cases is laid down.

The conclusions arrived at are—

1. This epidemic was one of the comparatively rare disease pemphigus acutus neonatorum.

2. It was due to infection by a pathogenic micro-organism, the *S. pyogenes aureus*, conveyed from case to case by a certain midwife.

3. That although it appeared chiefly in the newborn, and was fatal to these only, it also attacked older children and adults.

4. It was characterised by a bullous eruption on the skin, variable in distribution and extent, the specific micro-organism being found in the contents of the vesicles.

5. In many of the cases no symptoms other than this eruption were manifested, but a certain number of cases showed grave symptoms of a general infection, and invariably ended fatally.

6. The point at which the systemic invasion began in these fatal cases was the unhealed umbilical scar.

7. Treatment to all appearances had little or no effect upon the course and duration of the disease, whatever the result.

LITERATURE in English dealing with the form of pemphigus occurring in limited epidemics amongst newborn infants is of the scantiest. Neither in Allbutt's 'System of Medicine' nor in the 'Encyclopædia Medica' is there much information upon the subject, and it is dealt with by the writers rather as an interesting curiosity than as a disease coming within the purview of medical science in this country. Nevertheless it is recognised that a form of pemphigus other than syphilitic does sometimes occur, of which Dr. Payne, in his article in Allbutt's 'System,'* says that it is "a contagious pustular affection, sometimes fatal, occurring in limited epidemics, which have been observed to follow the practice of a particular midwife. It is local in distribution, occurs exclusively among the poor, and is associated with unclean linen and want of antiseptic precautions." The same authority, in an article published† some years ago upon this subject, had stated, "It is alleged by some and denied by others that there is a second form of pemphigus neonatorum which is not syphilitic. I am disposed to think it is extremely rare, if not entirely unknown, in this country; nevertheless the descriptions of French and German writers seem to show that there is such an affection, which appears sometimes to prevail epidemically, or to be endemic in certain places. It has been thought to be contagious." The "characters seem to delineate a form of disease with which medical men in this country are not familiar. The facts of endemic distribution and occasional epidemic occurrence seem to point to some specific infective cause, perhaps of septic origin."

In the September and October of 1902 an outbreak of this peculiar infection, confined to a comparatively small number of children, but of a high case-mortality, came under observation in the borough of Richmond, Surrey. For many years there has existed in this town an institution, known as the Richmond Lying-in Charity, for the care and relief of the indigent poor during labour and the puerperium.

* Vol. viii, p. 636.

† 'Lancet,' ii, 1893.

The Society employs a midwife, who, in addition to attending the charity cases proper, is permitted to conduct a private practice. The holders of the post for the last few years have been competent and thoroughly capable women, trained in a London institution, and holding the certificate of the Obstetrical Society. Latterly the present midwife to the Charity has been permitted to take probationer pupils for training in monthly nursing, and during part of the time of this epidemic had two of these girls living with her. In addition, having been in ill-health for some time, the bulk of her work during the spring and summer had been taken by a deputy, presumably a competent midwife, but one without any certification.

In August and September, then, the work was carried on by this substitute alone; afterwards by her in conjunction with the midwife herself and the two pupils. As, apparently, the first-named and one of these probationers were the two concerned in spreading the contagion, and as I shall have occasion frequently to mention them in the course of this paper, I shall in future refer to them as "A" and "Z" respectively. The last birth in the practice prior to the outbreak of the epidemic was on August 20th, and attendance on mother and child ceased on September 1st. Up to this time, though A had delivered most of the mothers, and had had sole charge for August, no case of pemphigus had been observed. From September 1st, the date of the last attendance on the last case unaffected, until September 10th, no birth took place. On this latter date the baby in whom the disease was first observed was born. From this time until October 23rd, when A left the district, twenty mothers were delivered; eighteen infants were affected by pemphigus, and of these eight died—a case-mortality of 44·4 per cent.

My connection with the epidemic dates from October 23rd. In the forenoon of that day I saw a baby, No. 9 in the series, which on cursory inspection presented an appearance exactly similar to that brought about by burning. The epidermis over a very large area had ex-

foliated, leaving a red, raw, weeping surface. The face—with the exception of the eyelids and forehead—the ears, the neck, and much of the anterior thoracic and axillary surfaces, the groins and abdomen, the nates and genital organs, and the skin over the lumbar region for an extent of some 3½ by 2½ inches, were in this condition. The scalp, arms, and legs also presented smaller circular areas of denuded derma. The scrotum was œdematous. The extremities and lips were cyanosed, the lungs were œdematous and their bases consolidated, there was much dyspnœa, and the child was evidently moribund. It was not possible to do more than give some general directions about warmth and the free use of brandy, and, as a matter of fact, the infant died within four hours of my visit. Learning that A had been attending to mother and child for some days previously, I judged it advisable to write to the Charity's midwife, telling her that it might be wise for A not to take any other cases for a week or so. That same evening the midwife came to me to tell me that A had left the district that morning, and that several other cases were infected. Of these cases I had the care of six, and by the courtesy of the medical attendants, to whom I am much indebted, I was able to interview most of the other mothers and to see the infants that were living. It will be preferable to give certain details respecting each case before discussing the points arising therefrom.

Case 1.—Male child, born September 10th. Mother delivered by A and baby washed by A each day afterwards. The bullæ were first noticed on September 18th, situated on the chin, thence spreading round the neck; no other portion of the surface became involved. The child was healthy, breast-fed, and took food well all the time. No symptoms of general infection were manifested, and the case went on to complete recovery.

Case 2.—Male child, born September 12th. Washed by A on day of birth and each succeeding day. A bulla was

first noticed on September 19th, on the left upper eyelid. Thence the skin lesion spread to the side of the head, the neck, axilla, chest, legs, and back. The groins and lower abdomen were said to have been "very bad," but the umbilicus was not involved. The child was healthy, breast-fed, and had no general symptoms. Treated with grey powder internally, and boracic acid for dusting, it recovered, the only traces on November 2nd being several thick white scabs on the scalp, the rest of the skin surface being free.

Case 3.—Male child, born September 13th. Mother delivered by A, who washed the infant each day. The first bulla noticed appeared on September 19th, on the chin, thence spreading to the face, head, and neck. No vesicles appeared on any other portion of the skin. The child was healthy, breast-fed, and never presented any general symptoms. Treated simply by dusting with boracic acid, recovery took place. On November 7th the only signs of the disease left were a couple of small circular stains on the scalp, left after shedding of the scabs that had been adherent thereto.

Case 4.—Male child, born September 19th, the mother being delivered by A. The first sign of the disease showed itself on September 26th, when a small pimple was noticed on the cheek. By the next day this had become a bleb. Rapid involvement of the skin, generally, followed. The groins and abdominal surface were much excoriated, the navel inflamed and protruding, and the abdomen distended. The palms and soles were at no time affected. The infant was healthy, and breast-fed until the sixth day, when it became fretful and disinclined to feed; from this time until death it was bottle-fed. Sickness began about the sixth day, and gradually became more frequent. Later, dyspnœa and cyanosis set in, and death took place on October 13th with so-called "convulsions." Treatment was by grey powder and inunction with mercurial ointment.

Case 5.—Male child, born October 3rd. Mother delivered

by A. Bullæ were first noticed on the neck, thence spreading to the head and chest. No other regions were affected. The child was healthy, breast-fed, and took food well all through. No general symptoms were noticed, and recovery took place. On November 4th there were to be seen the markings left by the bullæ on the thorax, and some crusts on the scalp.

Case 6.—Female child, born October 6th. Mother delivered by A. Vesicles first noticed on November 12th, on the left arm. From this they spread under the arm to the head, and to the legs. The groins were slightly affected, but the abdominal surface was free from any lesion, as were the palms and soles and the umbilicus. The child was healthy, breast-fed, took food well all through, and had no general symptoms. Treatment was by daily bathing with common soap and warm water, crusts being removed by bread poultices, and the underlying sores dusted with a powder of salicylic acid, zinc oxide, and starch powder, and covered with cotton wool; internally a saline mixture, containing potassium citras, was given, with grey powder at night. Recovery took place, and on November 10th the condition was as follows:—Small vesicles continued to appear, the last being noticed on November 8th (fourteen days before this note was made); these vesicles were small, dried up quickly, and did not spread. Over the areas of old bullæ there was a faint red staining, but otherwise the skin was healthy.

Case 7.—Male child, born October 7th. Mother delivered by A. A vesicle was noticed on October 10th, in the left axilla, thence spreading to the back. The regions affected were the back, the left groin (on which one bulla appeared), the lower portion of the abdominal surface on the left side, the legs, the scrotum, and the head. The palms and soles were unaffected, as was the umbilicus. The child was healthy, breast-fed, took food well all through, and never manifested any general symptoms. Dusting with boracic

acid was the only treatment. Recovery ensued, and on November 27th there were no signs of disease anywhere save for two small patches of dry epidermis on the scalp.

Case 8.—Male child, born October 7th. Mother delivered by A. Bullæ were first noticed on October 11th, on the neck. Thence they spread to the chest and under the arms, but to no other portion of the surface. The child was healthy, breast-fed, taking food well all through, and showing no general symptoms. Treated simply with a local application of olive-oil and lime-water, recovery took place. On November 21st there were left dull red mottled areas, showing the sites of the bullæ.

Case 9.—Male child, born October 12th. A had nothing to do with the infant until October 15th, when it was washed by her, as it was on the ensuing days. Vesicles appeared on October 19th, and on October 23rd had spread all over the body, the head, and the limbs, leaving, however, the palms and soles clear. The umbilicus was inflamed, and protruded as though there were an umbilical hernia, and the abdomen was moderately distended. The child had been healthy at birth, was breast-fed, and had taken food well until the morning of October 23rd, when it had refused the breast and had vomited at intervals. There was no diarrhœa. Dyspnœa was marked. Death took place in the afternoon of October 23rd.

Case 10.—Male child, born October 14th. Mother delivered by A. Vesicles were first noticed on the 17th, on the neck and head, quickly becoming generalised. On the evening of October 28th, when I first saw the infant, the condition was very similar to that in Case 9. The skin generally was diseased in circular patches, without involvement of the palms and soles, that of the groins and abdomen being much affected. The umbilicus was inflamed and protruded, and there was some distension of the abdomen. The child had been healthy, was breast-fed, and had taken food well till the 27th, when it refused the

breast and seemed weak. Vomiting at intervals set in, with some diarrhœa. There was moderate dyspnœa, and what were called by the mother "convulsions." These were evidently due to the commencing cardio-respiratory failure. There was slight cyanosis. Brandy and warmth were ordered, and Fowler's solution in one-minim doses every three hours, but death took place within twelve hours of my visit.

Case 11.—Female child, born October 15th, washed by A on the 16th and again on the 22nd. Vesicles were first noticed on the 24th, on the neck, and rapidly became generalised, but the palms and soles were not affected. The groins and abdomen were completely involved, the umbilicus was inflamed and protruding, and the abdomen was distended. The child was healthy at birth, and breast-fed until the 26th, from which date it was bottle-fed. Towards the last the food was badly taken, and sickness, dyspnœa, and so-called convulsions set in. Treatment was by grey powder and mercurial inunction up till the time of death, which took place on October 31st.

Case 12.—Female child, born October 15th. Mother delivered by A. Bullæ were first noticed on the 19th, on the neck. They were confined to this region, no other part of the surface becoming involved. The child was breast-fed, and took food well all the time, but being prematurely born was weakly and unhealthy. In spite of this it made a complete recovery.

Case 13.—Male child, born October 15th. Mother delivered by A. Vesicles first noticed on October 18th, appearing on the neck. Thence they spread to the head, the face (involving the conjunctivæ), the axillæ, the groins, the buttocks, and the scrotum. Neither palms nor soles were affected. The groins and the abdominal surface were much excoriated, the umbilicus was inflamed and protruding, and the abdomen was distended. The infant had

been healthy at birth, was breast-fed, and took food well till October 31st, when sickness began. For a day or two at this stage there was slight diarrhœa. Later, dyspnœa, becoming more and more marked, cyanosis, and so-called convulsions were observed. The child was treated as follows:—A bath morning and evening of weak warm solution of potassium permanganas, boracic acid dusted freely over the denuded areas, with lint smeared with boracic ointment laid on, envelopment of the body in cotton wool, and constant application of external heat; internally, grey powder in half-grain doses three times a day, and brandy freely, half an ounce or more being taken in the twenty-four hours. Whether the effect of this treatment or not, life was prolonged till November 5th, when death took place.

Case 14.—Female child, born October 16th. This case was not at any time attended by A, the infant being washed each day after delivery by Z. Bullæ were first noticed on October 22nd, appearing on the neck; later they spread under the chin, involving the ears, and under the arms. The palms and soles were not affected. The groins were said to have been involved; and there appeared at a late date on the umbilicus one spot. The child was healthy, breast-fed, and took food well all through. Complete recovery took place, the only traces of the disease apparent on November 15th being two large, bright red stains on the back of the neck, corresponding to the sites of the earliest bullæ. The groins and umbilicus showed no signs whatever of having been affected.

Case 15.—Male child, born October 17th. Mother delivered by A. Vesicles first noticed on October 19th, on the neck. These rapidly generalised, not being confined to any area, but the palms and soles were free. The groins and abdomen were badly excoriated, the umbilicus was inflamed and protruded, and the abdomen was moderately distended. The child had been healthy, was breast-fed,

and took food well till the 27th, when sickness set in. There was no diarrhœa. Dyspnœa was present towards the end, and convulsions were said to have been observed. The infant was seen in the evening of October 28th, and the same treatment as in Case 10 was ordered. As in this case, however, death took place a few hours later.

Case 16.—Female child, born October 22nd, on which date it was washed by A. Bullæ were first noticed on October 26th, appearing on the back of the neck. They were confined to the head and neck, except for one spot on the right groin. The palms and soles were free, as was the umbilicus. There was not any abdominal distension. The child was healthy, breast-fed, and at all times took food well. No general symptoms were manifested. The treatment was as in Case 13, recovery taking place. On November 7th the diseased areas were drying up and healing, nor were any fresh blebs appearing on any part of the healthy epidermis. On November 19th the skin merely showed staining as in the other cases that recovered.

Case 17.—Male child, born October 22nd. Mother delivered by A. Vesicles were first noticed on October 25th, on the neck, and rapidly spreading. The groins and abdomen were much involved, the umbilicus was inflamed and protruded, and there was some abdominal distension. The palms and soles were not affected. The child was healthy at birth, breast-fed, and took food well until October 28th, on and from which date it showed disinclination to feed, and sickness began. There was not any diarrhœa. Dyspnœa followed, and was very marked in the forenoon of October 29th, when I first saw the infant. The so-called convulsions were also observed. Similar treatment to that in Case 13 was ordered, but death took place early the same evening.

Case 18.—Female child, born October 22nd. Mother delivered by myself. A was not in attendance, but next

morning washed the infant, her last work in the district. Three days after, on October 25th, a bulla appeared on the neck. The disease rapidly became generalised, the groins and abdomen being very badly excoriated. The umbilicus was inflamed and protruded, and there was moderate abdominal distension. The palms and soles were free from vesicles. The child was a perfectly healthy, normal infant, and was breast-fed. Up till October 30th food was well taken, but on and from that date the child refused to take the breast; sickness set in, with slight diarrhœa; dyspnœa was noticed on the 31st, and on the evening of that day death occurred. Treatment was as in Case 13.

The facts that these cases arose within a definite period, were confined to the practice of a certain midwife, ceasing on her removal from the district, and presented certain common symptoms, point to the conclusion that they arose from a common contagion of septic origin, the transmitting agency being the midwife in question. For with the exception of one case, No. 14, and two infants born during the epidemic but not developing the disease, all the children were handled by her before the signs of infection were apparent. Twelve infants out of seventeen she conducted the delivery of, and these and the remaining five were washed one or more times by her. More than this—from September 8th till October 8th she had sole charge of the practice without any assistance; on and from the latter date Z aided in the care of the children. How Case 14, with which A at no time came into contact, became infected, is a little difficult to explain. As Z was attending to all the infected children it is to be assumed that the contagion in this instance is traceable to her. On the other hand, she also attended the two babies who did not develop the disease. One infant was born on October 11th, and washed by her every day until the 21st, when the attendance ceased; the other infant, born on October 23rd, was washed by her on the 24th and 25th. It is difficult to reconcile these facts, but the explanation probably is this—

Case.	Sex.	Date of birth.	Date when bullæ were first observed.	Mother delivered by	Dates on and from which infant was cared for by A.	Bulla first noticed upon	Regions involved in the eruption.	Palms and soles.	Groins and abdominal surface.	Umbilicus.	Abdomen.	General condition of infant up till time of appearance of grave symptoms (if any).	Feeding of infant.	Food taken.	Vomiting.	Diarrhœa.	Respiration.	So-called "convulsions."	Treatment.	Result.	Other Patients—adults and children—infected by each case.
1	M.	1902 Sept. 10	1902 Sept. 18	A.	From Sept. 10	Chin	Neck	Not affected	Not involved	Not involved	Not distended	Good	Breast	Well all through	None	None	Unaffected	Absent	No record obtainable.	Recovered	Mother, brother, and woman washing soiled clothes.
2	M.	„ 12	„ 19	No qualified attendant present	„ „ 12	Left upper eye-lid	Side of head, neck, axilla, chest, back, legs	„	Involved	„	„	„	„	„	„	„	„	„	Locally: boric powder. Internally: grey powder.	„	Mother; two spots under chin, appeared 15 days after infant's first bulla, and lasted 7 days.
3	M.	„ 13	„ 19	A.	„ „ 13	Chin	Face, head, and neck	„	Not involved	„	„	„	„	„	„	„	„	„	Locally: boric powder. Internally: nothing.	„	Brother, 2 years old, on buttock.
4	M.	„ 19	„ 26	A.	„ „ 19	Neck and cheek	Buttocks, genitals, arms, legs, body	„	Involved	Involved	Distended	„	„	Well till sixth day of disease	Slight	„	Dyspnœa	Present	Locally: Ung. Hydrarg. Internally: grey powder.	Died Oct. 13	Mother, on hands.
5	M.	Oct. 3	Oct. 9	A.	„ Oct. 3	Neck	Head and chest	„	Not involved	Not involved	Not distended	„	„	„	None	„	Unaffected	Absent	No record obtainable.	Recovered	Baby in neighbour's house, on body; girl nursing this child, on hand.
6	F.	„ 6	„ 12	A.	„ „ 6	Left arm	Axilla, head, legs	„	Groins involved, abdomen clear	„	„	„	„	„	„	„	„	„	Locally: dusting powder (zinc, Ac. Salicyl., starch). Internally: grey powder and saline mixture.	„	None.
7	M.	„ 7	„ 10	A.	„ „ 7	Left axilla, left dorsal region	Back, head, left groin and abdomen, scrotum, legs	„	One bulla on abdomen	„	„	„	„	„	„	„	„	„	Locally: boric powder. Internally: nothing.	„	Mother, one spot.
8	M.	„ 7	„ 11	A.	„ „ 7	Neck	Chest and axillæ	„	Not involved	„	„	„	„	„	„	„	„	„	Locally: lime water and oil. Internally: nothing.	„	None.
9	M.	„ 12	„ 19	No qualified attendant present	„ „ 15	„	Face, back, abdomen, scrotum	„	Much involved	Involved	Distended	„	„	Well till 36 hours before death	Slight	„	Dyspnœa in later stages	No record obtainable	Stimulants and warmth (moribund when seen).	Died Oct. 23	None.
10	M.	„ 14	„ 17	A.	„ „ 14	„	Eruption generalised	„	„	„	„	„	„	Well till Oct. 27th; after this badly	„	Slight	„	Present	Locally: boric powder. Internally: Liq. Arsen. ♏j every three hours.	Died Oct. 29	None.
11	F.	„ 15	„ 24	Charity's midwife	Said to have washed on Oct. 16 and ensuing days. Is known certainly to have washed on Oct. 22	„	Eruption generalised	„	„	„	„	„	Breast till Oct. 26th; after this date bottle-fed	Well till late stage	None	None	„	„	Locally: Ung. Hydrarg. Internally: grey powder.	Died Oct. 31	None.
12	F.	„ 15	„ 19	A.	From Oct. 15	„	Neck	„	Not involved	Not involved	Not distended	Bad; prematurely born	Breast	„	„	„	Unaffected	Absent	No record obtainable.	Recovered	None.
13	M.	„ 15	„ 18	A.	„ „ 15	„	Neck, head, face, conjunctivæ, axillæ, groins, buttocks, scrotum	„	Much involved	Involved	Markedly distended	Good	„	Well till Oct. 31st; after this badly	Considerable	Slight	Dyspnœa in later stages	Present	Locally: Condy bath, boric powder and ointment, warmth. Internally: stimulants freely and grey powder.	Died Nov. 5	Mother, on hand.
14	F.	„ 16	„ 22	Charity's midwife	Not at all	„	Neck, ears, arms	„	Groins involved, abdomen not till late	Not involved till very late	Not distended	„	„	Well all through	None	None	Unaffected	Absent	Locally: dusting powder, as in Case 6. Internally: grey powder and mixture containing Vin. Antimon. and Potass. Chlor.	Recovered	None.
15	M.	„ 17	„ 19	A.	From Oct. 17	„	Eruption generalised	„	Much involved	Involved	Distended	„	„	Well till Oct. 27th; after this badly	Considerable	„	Dyspnœa in later stages	Present	As Case 10.	Died Oct. 29	None.
16	F.	„ 22	„ 26	No qualified attendant present	„ „ 22	„	Head, neck, groin	„	Groins involved, abdomen clear	Not involved	Not distended	„	„	Well all through	None	„	Unaffected	Absent	As Case 13.	Recovered	Brother, 2 years old, on arm.
17	M.	„ 22	„ 25	A.	„ „ 22	„	Eruption generalised	„	Much involved	Involved	Distended	„	„	Well till Oct. 28th; after this badly	Slight	„	Dyspnœa in later stages	Present	„	Died Oct. 29	None.
18	F.	„ 22	„ 25	Doctor	„ „ 23	„	Eruption generalised	„	„	„	„	„	„	Well till Oct. 31st; after this badly	„	Slight	„	„	„	Died Oct. 31	Mother, on breast.

that Z used in washing Case 14 the same flannel apron on which one of the infected cases had been laid not half an hour previously.

Additional proof of the contagiousness of the disease is afforded by a number of cases, adult and juvenile, in which the bullæ appeared. Of Case 1 the medical attendant wrote me, "The disease was evidently contagious. The mother, her son, and the person who washed some of the baby's clothes were all sufferers from it afterwards." In Case 2 the mother stated that she had had two vesicles under the chin, similar to those on the infant, but causing much itching, appearing fifteen days after the first bulla on the child, and remaining seven days. No sign of these vesicles remained on November 2nd, when I saw her. In Case 3 a boy two years old developed bullæ on the left buttock and flank. A napkin, worn once by his infant brother, slightly stained by urine, but otherwise unsoiled, had been put on him unwashed. Soon after the bullæ developed, and on November 7th the following was the appearance presented :—On the left buttock were four circular, discrete, bluish-red marks, three each as large as a halfpenny, the fourth about the size of a threepenny-piece. On the body, running from about the middle of the iliac crest on to the abdominal wall, were three or four others, which had been confluent. The skin over these discoloured areas was quite healthy. In Case 4 the mother developed bullæ on the hands, of which traces were visible on November 4th in small circular patches of dried exfoliating epidermis. In Case 5, A having ceased attending on September 29th, the infant was washed from this date by a neighbour. On October 10th a baby of 7½ months that this woman was nursing developed the disease, a large bulla appearing on the thigh. The discharge from this, being conveyed to other parts, brought about a general distribution of the eruption. And from this child a girl of twelve, living in the same house, contracted the disease. For having on one occasion replaced on the baby's arm a bandage that had become disarranged, some of the discharge was

smeared over a cut on the middle finger, considerable itching being felt at the time. That night a large bulla developed on the skin around, remaining irritable for some time. On November 21st the state of these children was as follows:—Over the baby's skin, corresponding to the sites of the blebs, were large, circular, dull red stainings; the skin, however, was healthy. The girl showed a large abraded area on the right middle finger, red, dry, and shining, over which the skin had evidently lost the superficial epidermic layer. In Case 7 the mother developed one vesicle on the left wrist, fourteen days after the first manifestations in the infant, and three days after the first occasion on which she herself washed it. In Case 13 vesicles developed on the hand of the mother. She had washed her baby for the only time on October 28th. On November 7th three foci of infection were noticed on the right hand, one on the tip of the little finger, the others on the third finger at the junction of the distal and middle phalanges, all on the palmar aspect; the two on the third finger became confluent, forming one long bulla. These blebs had all disappeared by October 19th, and no more developed. In Case 16 a brother of the infant, two years old, showed on November 12th a large circular patch of denuded derma, red and weeping, on the inner side of the flexure of the left elbow. This had begun on November 5th as a vesicle, and had pursued a course identical with that followed by the skin affection in the infant. Finally, in Case 18 the mother developed a very small vesicle on the inner upper quadrant of the right mamma, about one inch from the nipple areola.

In addition to these cases of contagion, both Z and her fellow-pupil showed slight infection, Z having one small mark on the left forearm, and the other girl two vesicles on the face and one on each hand.

The source of the contagion is not clear. I was unable to interview the deputy midwife, so that my information concerning her came through an intermediary. Apparently she suffered from a pustular acneiform eruption,

sometimes to a greater degree, sometimes to a lesser, never during all the time she was in Richmond being quite free from pustules. Possibly this was the fount of infection, but as no case arose until September 18th, although for months previously this woman had attended the majority of the confinements and infants, one must reserve judgment on the point. It is quite possible the infection arose from the surroundings of Case 1, and it is of interest to note that the medical attendant of this patient says, "About one and a half years ago I had a case of the same kind about fifty yards from her (the mother's) house, which I then attributed to insanitary surroundings."

The contagion must have been conveyed in one of two ways—either on the hands or the aprons of the midwives, for each child had its own washing materials. In this connection it is noteworthy that in thirteen cases the first bullæ noticed were on the neck; of the other cases, two showed them on the chin, one in the left axilla on the dorsal aspect, one on the left arm, and one on the left upper eyelid. That is to say, fifteen of the eighteen cases showed the first signs of infection over areas where the hand is placed to support the child in the bath; and as sufficient pressure is exerted at such a time to rub off the superficial epidermic cells from the delicate skin of a newborn infant, a nidus for the entrance of septic microorganisms is provided. Should either the supporting hand or the apron on which the child is laid be infected, one can readily see how cases arise.

Previous epidemics of pemphigus neonatorum that have been investigated have been shown to be due to various micrococci. Bulloch, in the 'British Journal of Dermatology' for 1896, discussing the bacteriology of a series of cases of pemphigus acutus, refers to this point. Summarising the work done up to the time at which he wrote, he states that in 1876 Röser found micrococci in the contents of the bullæ; in 1881 Gibier found short chains of cocci; in 1884 Colrat found diplococci, an observation repeated in 1887 by Zechmeister, who considered the organism identi-

cal with that isolated by Demme from a series of cases of pemphigus acutus in adults; in 1890 Strelitz found two organisms, one giving a golden-yellow growth on culture media, the other a milky white, a result he obtained again two years later in another epidemic; and lastly, in 1891 Almquist came to the conclusion that an outbreak of pemphigus neonatorum coming under his observation was due to infection with the *Staphylococcus pyogenes aureus.*

In the epidemic now under consideration serum from two separate sources was examined. On October 29th, from a bulla in the groin in Case 16 some of the contents were drawn off. A sterilised capillary tube—one of those sent out by the Jenner Institute for the collection of blood serum to be tested for Widal's reaction—was taken, the ends nipped off by sterilised forceps, and one extremity plunged directly into the bulla. The tube having been partially filled, the ends were sealed in a flame, and it was at once sent off to the laboratory of Mr. G. L. Eastes, in Queen Anne Street, with the request that the organism or organisms present should be isolated. On November 3rd the following report was made:—"The serum from pemphigus bulla for bacteriological investigation received at the laboratory on October 30th, was inoculated into various culture media, and incubated aërobically and anaërobically, and pure cultures of the *Staphylococcus pyogenes aureus* have been obtained." Nor had any other organisms shown themselves in these cultures up till November 30th. On November 11th some of the contents of the bulla on the hand of the mother of baby No. 13 were taken in the same way, and sent to Mr. Eastes, the source of the serum not being stated. The bleb being small, and the contents rather viscid, very little material was obtained; and the report furnished on November 19th states, "The amount of material transmitted was so small that only one culture could be made, and one unsatisfactory cover-smear preparation. From the culture made on agar the *Staphylococcus aureus* only was obtainable."

Here, then, in two cases, whose only connection was that

the infants were affected by the same infectious disease, and whose only intercommunication had been through the nurses A and Z, the same micro-organism was found. The balance of probability is against this being merely a coincidence, and we may fairly assume that the cause of the disease in both cases was the specific micro-organism present. Further, from a study of the course of the epidemic, of the symptoms manifested, and the lesions presented by those affected, from the similarity of the *post-mortem* appearances in the two cases examined, and from the microscopic appearance of the skin in Case 10, the inference suggests itself that, had all the cases been bacteriologically examined, the same staphylococcus would have been found in each.

Assuming, then, that the infective agent was the *Staphylococcus pyogenes aureus*, and that it was conveyed from infant to infant in the manner suggested, the question of the period elapsing between inoculation and the development of a bulla upon the site first arises. The earliest day after possible infection on which any child showed marked symptoms was the second; only one case, No. 15, had bullæ as early as this. In Cases 7, 10, 13, 17, and 18 the skin lesion was noticed on the third day; in Cases 8, 9, 12, and 16 on the fourth day; in Cases 3, 5, and 6 on the sixth day; in Cases 2, 4, and 14 on the seventh day; in Case 1 on the eighth day; and in Case 11 on the ninth day. It would seem that the time elapsing between infection and development of the bulla on the site of inoculation is one varying from two to four days. As we do not know the date on which A herself became infected, we cannot take into account Cases 1, 2, and 3. Of the remaining cases, all but five have this apparent incubation period. The delay in Cases 4, 5, and 6 may be due to a less virulent infection in the earlier cases. Certainly all cases tended by A after October 7th have this two- to four-day period, for Case 11, though not developing bullæ until the ninth day, is known positively to have been washed by A on the sixth day. In connection with the

early cases it must be remembered that no information whatever has been obtainable from A. The only evidence as to dates of appearance of lesions is derived from the mothers, and it is quite possible that the bullæ had formed some days before their attention was directed to the unusual condition. Therefore the discrepancy between 4, 5, and 6 and the other cases may be apparent, not real. Case 14 was, as we have seen, tended entirely by Z, and the date on which contagion was conveyed is not approximately ascertainable. The period elapsing between inoculation and the earliest naked-eye signs of a commencing bulla is considerably less than three to four days. For the disease does not appear to have been at any time observed until a bulla had formed. The pink macule on the skin that precedes the appearance of this is liable to pass unnoticed. It will later be shown that each bulla begins as a small red spot, easily overlooked, and showing itself some twelve to thirty-six hours before the separation of the epidermal layers and formation of blebs takes place.

The one symptom common to all the cases was the skin affection; nor was there any other manifested in those infants that recovered. In all the cases that went on to a fatal termination there were other signs, forming a group of easily recognisable and similar symptoms, the whole composing a clinical picture of definite outline. First describing in detail the skin lesion, we shall afterwards take up the symptoms peculiar to the group of fatal cases.

In his little work on diseases of the skin, Dr. Liveing * thus refers to what is probably this form of pemphigus:—"There is a variety of bullous eruption described by the late Mr. Naylor as 'pompholyx diutinus in children.' He says, 'The first sign is usually an eruption of several minute red spots on the surface, generally of the abdomen and thighs, and afterwards on any part of the body. In the course of a day or two each becomes the seat of a small vesicle not larger than a pin's head, and contains a clear fluid; it is surrounded with a narrow red margin. The

* 'Handbook of Diseases of the Skin,' R. Liveing, edit. 5, 1887.

vesicles enlarge rapidly and to such a degree as to attain, many of them, the diameter of a hazel-nut in the space of twenty-four hours or less. It not infrequently happens that long ere the vesicle has reached this size it bursts, but the red spot on which it has evolved still spreads, and in a circular direction; in this manner it may attain one and a half inches or more in diameter.' "

The vesicles in the cases now under discussion pursued a very similar course. As before stated, in all cases the first observation was made when serum had collected under the skin. One mother said that the spots appeared as "a glassy pimple, spread rapidly, and came to water;" another, that they were like "little bladders with matter in them." Usually they were said to commence as "watery blisters," or "clear water blisters."

In those vesicles that I observed from their first appearance the following was the course:—A small, circular, pale pink macule formed, not unlike the spot left after a flea-bite, and about that size or a little smaller. As this gradually enlarged the skin over its surface, except for a very narrow areola, became pale and slightly wrinkled, looking not unlike the pellicle forming on boiled milk. This was evidently due to the separation of the layers of the epidermis, and denoted the commencing formation of a bulla. Enlargement went on rapidly, more or less serum collecting, until the vesicle was from half an inch to one inch in diameter, when almost invariably rupture took place, the covering layer being abraded and the contents discharging. There was left a round, red, moist, smooth, glistening patch, identical save in colour with the denuded surface in gangrene. This patch was surrounded by a bright pink border, one eighth to half an inch wide, separating it from the healthy skin. Over this areola the superficial layers of skin were easily removable by moderate pressure, showing that the process of cleavage had gone on here also. Enlargement of the areas went on by a uniform extension of this areola, denudation at the same time taking place from within out. When the extending edges of two bullæ

met they coalesced, an irregularly circular or oval patch resulting.

In the cases that recovered, extension did not continue for long, and the denuded areas became dull, paler in colour, with or without a yellowish incrustation, dry, and the superficial epidermis at the borders no longer exfoliated. The areola disappeared or became indistinguishable from what had been the weeping surface; and after a time, varying from two to six or eight weeks, the site of the lesions was marked merely by a reddish staining of the skin, having the outline and extent of the erstwhile denuded areas.

In the fatal cases, on the other hand, no drying or paling of these areas took place. They remained continually moist, even though dusted with an antiseptic powder, until the death of the infant. Extension went on unchecked, so that relatively enormous areas became involved. Further, it was observed in these cases that as the fatal termination approached, cleavage of the skin took place in various situations where no inflammatory macule was originally noticed, and the resulting vesicle had no pink areola. The fluid contents, too, in these bullæ were very scanty, and greyish yellow rather than yellow or golden. It would seem as though the specific infection had found its way in the blood to the deep epidermal layers, and there exerted its action, the local extension becoming a minor factor. And it is noteworthy in this connection that at the *post-mortem* on Case 11 the skin on the body, even where apparently healthy, exfoliated readily under slight pressure of the fingers.

That in the recovering cases, and through the greater part of the duration of the disease in the fatal cases, new bullæ arose by local contagion, is evidenced by the sites of these. It has above been pointed out that the original lesion made its appearance at some point of pressure, situated almost invariably either on some fold of skin or where two surfaces were frequently opposed. On the healthy skin that rubbed upon the diseased area a fresh

bulla soon made its appearance, and pursued a similar course. The vesicles were always in regions where there was this friction of surfaces or chafing of the skin, and never in any other situation. Thus they were found generally upon the neck, in the axillæ and groins, on the genitals, nates, inner aspect of thighs, and the flexures of the elbows and knees. The face, the back from the sixth cervical to the lower dorsal spines, the shoulders, and the scalp were rarely; the extensor surfaces of the forearms and the legs, the palms and soles, and the forehead were never, involved. The following notes, made when performing the autopsy on Case 11, give an excellent idea of the extent and distribution of the skin lesions in one of the severe and fatal cases. The superficial epidermic layers had disappeared from the cheeks, nose, and left ear; from the flexures of the elbows; from the right upper arm; over the whole abdomen, limited by the costal margins above, and extending downwards across both groins and for two inches down the thighs, extending also round the dorsum, following above the line of the ribs as high as the sixth dorsal spine, and downwards passing over the buttocks to end halfway down the posterior aspect of the thighs, involving the genital organs. The whole of the left leg posteriorly, from knee to ankle, was denuded, as was the right leg from knee to toes except for a small strip on the outer side running from the inner side of the foot to the outer malleolus.

The exfoliation was due to horizontal cleavage of the epidermis between the stratified and the Malpighian layers. This was well exemplified in the microscopic slides prepared respectively from sections of a new or recent bulla, and one of long standing, taken from the skin of the baby the subject of the first autopsy. The section from the new bulla stained with hæmatoxylin and eosin showed all the layers of the epidermis to be present, but separated over a considerable extent, the separation being seen to have taken place along the lower edge of the stratum lucidum; no necrosis or degeneration of the tissues had as yet arisen.

Beneath the Malpighian layer the vessels of the skin were thrombosed, and there was some round-celled infiltration. No micrococci, however, were discoverable in these vessels or in their neighbourhood in the corresponding section stained by Gram's method, although there were scattered micro-organisms along the whole length of the free edge of the Malpighian layer. In the sections from the old bulla some necrosis and considerable degeneration of tissue were noticeable. The epithelial tissues of the skin were wanting, and the subcutaneous tissue was degenerated, with thrombosed vessels, some free hæmorrhage, and much small-celled infiltration. In the section stained by Gram's method the degenerated and necrosed area was seen to contain large numbers of micrococci, arranged occasionally in groups, but not in chains. Most abundant on the surface of the necrotic area, they became less numerous towards the deeper part, though still to be found in it.

To the naked eye there was no infiltration of the erythematous edge of the bullæ, nor was ulceration manifest until the latest stages; these facts alone would serve to distinguish the disease from pemphigus of syphilitic origin. Add to this that no history of syphilis was obtainable in any case, nor were there any concomitant evidences of this malady, and any lingering doubts as to the presence of this causal agent are dispelled.

The additional symptoms manifested by the group of fatal cases were those of an acute toxæmia. In each of these infants the groins and lower abdomen were much diseased, and extension to the umbilicus followed. This, still an unhealed surface in these recently delivered infants, became inflamed, and so much swollen that an umbilical hernia was simulated. Distension of the abdomen followed, varying in degree, but more marked the longer the child lived, reaching its maximum in Case 13. These were the only signs for some days, and the children seemed well, taking the breast readily. Then a disinclination to feed was observed, with vomiting after a meal. This vomiting became persistent, though at long intervals, and

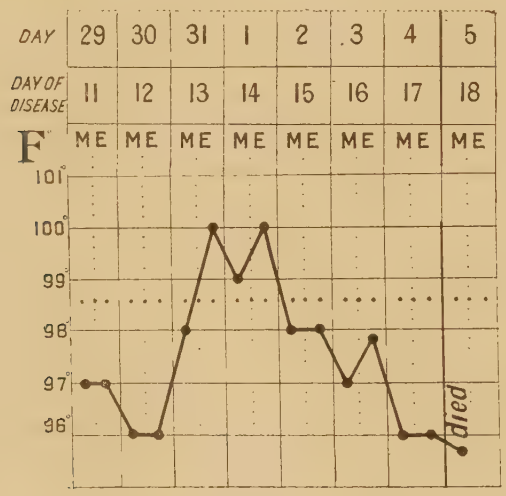
occurred though no food was being taken. Then the lungs gradually filled with serum, increasing dyspnœa with cyanosis was noted, and finally, within from twelve to thirty-six hours after the first attack of sickness, death took place, ushered in by what were termed by those nursing the children "convulsions"—really evidences of the waterlogged condition of the lungs, and the embarrassment of the breathing and the heart's action. The one exception to this course of events was Case 13, where the infant lived five days from the onset of sickness.

That the unhealed stump of the umbilical cord was the path by which the micro-organisms gained entrance, and that the above-detailed train of symptoms was resultant on this and evidenced a general toxæmia, admits of little doubt. In none of the cases that recovered, except in No. 14, was the umbilicus affected. In Case 14 a bleb is said to have appeared in this region three weeks after delivery, when complete healing of the stump had taken place, and when the infant had almost completely recovered from the disease. In every one of the cases ending fatally the umbilicus was inflamed as already described, and this inflammation was in each case followed by similar symptoms. At the autopsy in Case 11 the umbilicus, with a portion of the round ligament, was removed and examined microscopically. The report on this specimen is as follows:—"In the deeper parts of the fibrous tissue removed with the umbilical scar is seen a cleft resembling a lymphatic space, but without any definite endothelial lining. Along the edges of this are to be found a few scattered micrococci, which stain by Gram's method, and appear, from a study of the whole specimen, to be confined to this cleft. There is a prolongation of this cleft shown in the section, along which the micrococci can also be found. Inasmuch as in the neighbourhood there are vessels containing *ante-mortem* clots, and as the location of the cleft is in the deeper structures, these facts suggest that the original point of infection was the umbilicus itself."

As to temperature in these cases, nothing very definite

can be said. Only three imperfect series of observations have been recorded, in Cases 13, 16, and 18. In the first of these the body-heat was noted from the morning of October 29th, the eleventh day of the disease, until death on November 5th. During that time the temperature was subnormal, except on the evening of October 31st and the morning and evening of November 1st. On these dates the record was 100° F. each evening and 99° F. the intervening morning, dropping to 98° F. the morning of November 2nd,

Case 13.

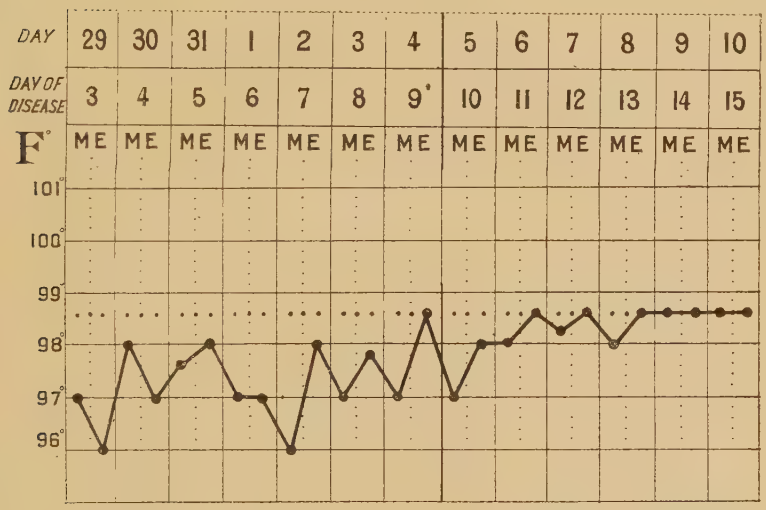


and the day before death being 96° F. In Case 16 observations were made from October 29th, the third day of the disease, until November 10th. Until November 4th the temperature was subnormal; from this date normal until the record was no longer kept. In Case 18 the temperature was noted from October 28th, the third day of the disease, until death on October 31st; and here again was subnormal save on one occasion, the evening of October 30th, when it just reached 98·4° F. It was noticed further that just before death in both the fatal cases the thermometer registered *below* 96° F. One might infer that a sub-

normal temperature is to be expected in cases of this nature, at any rate after the disease has become established; and the point becomes of importance in considering the treatment to be followed.

As already stated, autopsies were made on the bodies of two infants, Cases 10 and 11. In both cases the appearances of the internal organs were the same, the distribution and extent of the skin lesion only differing; and the following notes are applicable to both.

Case 16.



The pericardium contained a small quantity of fluid. The heart was normal in size and structure; its cavities were full of blood. The coronary vessels were engorged.

The lungs were congested, and exuded a blood-stained serum on section. The left lower lobe was partially, the right lower lobe entirely consolidated.

The liver and kidneys were congested.

The intestines were distended and full of gas, as was the stomach. The mesenteric vessels were engorged.

No inflammation of any capsule or investing membrane was found.

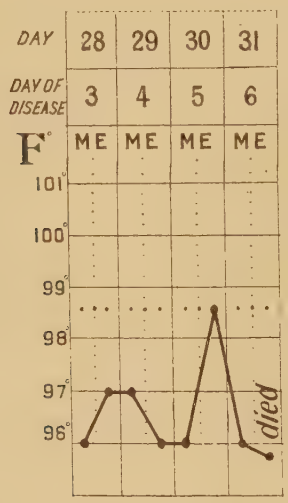
The skull was not opened in either case.

From the mouth and nostrils of both infants a bright yellow fluid ran out on pressure. A similar discharge was noted shortly before death in some of the other cases, running from the mouth and nose, or vomited.

Sections were prepared from the liver in Case 11. The structural appearances were merely those of acute congestion; no bacteria were discoverable.

The therapeutic measures adopted in the epidemic were

Case 18.



tentative; nor could they have been otherwise, because of the obscurity veiling the disease. It was not possible to do more than treat symptoms, and even here the methods were haphazard and uncertain. No statements as to treatment in Cases 1, 5, and 12 are forthcoming, further than that boracic acid was used as a dusting powder. This was the only remedy applied in Cases 3 and 7 also. Case 2 was thus dealt with locally, with small doses of grey powder internally. Case 8 was painted with a mixture of lime-water and olive-oil, no drugs being given by the mouth. Cases 4 and 11 had half a grain of grey powder twice a

day, and free inunction with mercurial ointment. Cases 10 and 15 were given Fowler's solution in doses of one minim every two hours, and ten minims of brandy every four hours. Cases 6 and 14 were treated by daily bathing in plain water, grey powder being administered at night; and a dusting powder of oxide of zinc, salicylic acid, and starch powder was used, unhealthy areas being painted with a weak solution of nitrate of silver, and covered with a layer of white precipitate ointment. The remaining cases were immersed daily for five minutes in a weak warm solution of potassium permanganas, the skin afterwards being dusted with boracic powder and smeared with boracic ointment; the child was then enveloped in cotton wool and kept very warm. Grey powder was given in half-grain doses three times a day, and brandy administered freely. That warmth and brandy are most valuable adjuncts Case 13 proves. In addition to being enveloped in wool, the infant was kept in constant contact with hot-water bottles, and took about half an ounce of the spirit in the twenty-four hours. This child lived five days from the onset of what came to be recognised as symptoms of approaching death.

Looking back upon this epidemic, it would seem that the treatment offering most hope of a successful result might be somewhat as follows:

Remembering that without general infection recovery ensued, while with it death was inevitable, and that the infection became general through the channel of the unhealed umbilicus, the first indication is to keep the stump scrupulously aseptic, protected by some efficient antiseptic dressing. For the treatment of the skin lesions it might be found that a daily warm bath in a weak solution of creolin (ten to thirty minims in two to four gallons of water), or of permanganate of potash (five to fifteen grains in two to four gallons of water), would be beneficial. The infant should be completely immersed, save for the head and face, and kept in the liquid five or ten minutes. Drying should be rapid and careful, and the raw surfaces should be freely

dusted with boracic acid and starch powder, or some other bland antiseptic dusting powder, and afterwards covered with a thin layer of a mild antiseptic ointment. If the child were then warmly swaddled, and kept very warm, no further treatment probably would be necessary. If internal medication be apparently indicated, brandy in small doses, with perhaps a little grey powder or Fowler's solution, could be given.

Should, in spite of care, the umbilicus become infected, and the train of symptoms earlier described ensue, artificial heat and the free use of brandy would probably be the best remedies, although a great deal of benefit could not be expected. It is possible that in small doses of a polyvalent antitoxic or antimicrobic serum the only certain specific would be found.

It scarcely needs to be added that the most scrupulous antiseptic precautions should be observed by all who come in contact in any way with an infected case.

Summing up, the conclusions arrived at were—

1. That this epidemic was one of the comparatively rare disease pemphigus acutus neonatorum.

2. That it was due to infection with a pathogenic micro-organism, the *Staphylococcus pyogenes aureus*, conveyed from case to case by a certain midwife.

3. That though appearing chiefly in the newborn, and only fatal to these, it also attacked older children and adults.

4. That it was characterised by a bullous eruption on the skin, variable in distribution and extent, the specific micro-organism being found in the contents of the vesicles.

5. That in many of the cases no symptoms other than the skin eruption were manifested, but that a certain group of cases showed grave symptoms of a general infection, and invariably ended fatally.

6. That the point at which the systemic invasion arose in these fatal cases was the unhealed umbilical scar.

7. And that treatment to all appearance had little or no effect upon the course and duration of the disease, whatever the result.

Dr. CULLINGWORTH said that one president of the Society after another had expressed his regret that so few papers were presented dealing with the diseases of the newborn. He therefore thought that Dr. Maguire's paper should be specially welcomed as helping to vindicate the Society's claim to embrace within its scope the abnormalities and diseases of newborn children. Apart from that, however, the paper was in itself an admirable one, and showed a capacity not only for careful and accurate observation, but for making clear and painstaking records of such observations. The table seemed to supply information on all the essential points, and to be exactly what such a table should be. Dr. Maguire had certainly added to his (the speaker's) knowledge, and probably to the knowledge of most of those who were present. It was interesting to note that in a considerable number of the cases the disease had been communicated to elder children and to adults. This fact threw some light upon a case of acute pemphigus which he had himself seen in an adult, and which at the time puzzled him extremely. With regard to the special micro-organism that had been discovered in connection with two of the cases in this remarkable epidemic, he could scarcely bring himself to believe that so widely diffused a microbe as the *Staphylococcus pyogenes aureus* ought to be regarded as the specific source of this particular infection. He was not a bacteriologist, and therefore could not speak with authority on this point, but he felt disposed to suggest that on further investigation some infective micro-organism of a more distinctive character would probably be found associated with this disorder.

Dr. VINCENT DICKINSON said that a similar epidemic occurred at the Foundling Hospital at Parma in 1901–2, and was described by Dr. Pasini at great length in the 'Giornale italiano delle malattie venere e delle pelle' of this current year. The clinical histories of fourteen cases were given, most of which ended fatally; examination of the blood showed a marked leucocytosis, especially in mononuclear cells, pointing either to altered chemiotaxis or to efforts of defence on the part of the subject against pathogenic agents. The cases pointed indubitably to the conclusion that a specific organism was the exciting cause, and that there was no relation between this disease and syphilis. The speaker thought that the primary mode of infection was not through the umbilical scar, which only became infected later through the discharge from the bullæ, general systemic infection with a fatal result then occurring, as shown by Dr. Maguire's cases. The fact that adults became infected also pointed to the same conclusion.

Dr. J. M. H. MACLEOD, after thanking Dr. Routh for giving him the opportunity of being present to hear Dr. Maguire's lucid and scientific report, referred to a few points which had

been raised in the paper. He remarked on the increasing rarity of this affection at the present time compared with its prevalence a few years ago, and believed this to be due to the better antiseptic precautions taken in lying-in institutions and elsewhere. He agreed with the speaker that the disease was due to infection by a pathogenic micro-organism, but disputed his conclusion that the specific microbe was the *Staphylococcus pyogenes aureus*, believing it to be a streptococcic infection due to the *Streptococcus pyogenes*, or a variant of it. He pointed out that unless special methods were employed in taking cultivations from the skin, and especially from the contents of vesicles or bullæ, cultures of staphylococci would invariably be obtained. He described a method devised by Sabouraud, in Paris, in which the contents of the bullæ were aspirated into a sterile pipette containing ascitic fluid after sterilising the skin, and the pipette incubated for forty-eight hours at 37°C. By this means Dr. MacLeod had obtained pure cultures of streptococci in a fatal case of pemphigus neonatorum. He referred to the relation of this disease to impetigo contagiosa, and reminded the members that the initial lesion of the latter disease was a vesicle, and that the infective agent was now generally believed to be the *Streptococcus pyogenes*, and not the *Staphylococcus*, as was once thought. He noted the occasional occurrence of *impetigo contagiosa* in the same family as *P. neonatorum*. He referred also to the close relationship of the disease to the acute pemphigus of adults. With reference to Dr. Maguire's notes on the umbilicus as the seat of infection, the speaker believed that in a large number of cases the inoculation did take place there, but that it might occur on any abrasion of the skin; and mentioned a case in which the mucosa of the lip was the site of infection. With reference to differential diagnosis, he believed that there was no great difficulty in distinguishing this affection from the so-called "congenital syphilitic pemphigus," for various reasons which he detailed, but he considered that it might more readily be confused with the rarer bullous affection known as "epidermolysis bullosa hereditaria," the pathology of which was absolutely different in that it was not due to a microbe, but was essentially a condition of excessive vulnerability of the skin, in which even slight traumatism resulted in the formation of flaccid bullæ, and was probably caused by an instability of the vaso-motor system of the skin analogous to that which is present in factitious urticaria.

Dr. Peter Horrocks thought there could be no doubt that pemphigus, as well as many other skin lesions and illnesses, were commoner in the newborn in former times than at present, owing to the want of surgical asepsis on the part of the attendants. He considered the paper a scientific contribution to the elucidation of the cause of a rare condition, but he did not

think the staphylococcus was the culprit. Neither did he think with Dr. MacLeod that it was the streptococcus, because both these microbes were so prevalent that it was exceedingly difficult to get rid of them from one's hands. After as thorough a sterilisation as possible the *Staphylococcus albus* could be found under the nails. Hence he thought pemphigus neonatorum would be common instead of rare if either of these microbes were the cause of it. Probably it was due to some other microbe, or else if due to one or both of the above-mentioned germs there must another factor necessary, which other factor was rarely present. He asked is any of the mothers were ill at all, and if they nursed the infants.

Dr. G. J. Maguire, in reply, said that the disease was one confined to the skin in the majority of cases, and was without symptoms of systemic invasion; where this took place the umbilical scar was always previously involved, and the cases ended fatally. It seemed fair, therefore, to conclude that this was the channel by which a simple skin disease became a grave general disorder. Replying to Dr. Horrocks, he said that all the mothers were healthy, with one exception, nor had this woman any grave disease. All the infants were breast-fed.

DECEMBER 2ND, 1903.

EDWARD MALINS, M.D., President, in the Chair.

Present—49 Fellows and 3 visitors.

Books were presented by the Clinical Society of London and Dr. Engström (Helsingfors).

Samuel James Murdoch Cameron, M.B., Ch.B. (Glasgow), was declared admitted.

The following candidates were proposed for election:—Ernest C. Drake, L.R.C.P.Lond., M.R.C.S.Eng.; Walter H. Swaffield, M.D., F.R.C.S.Edin.; Richard Worthington, M.B., B.C.Cantab.

BILATERAL EXTRA-UTERINE PREGNANCY.

Shown by Dr. H. RUSSELL ANDREWS.

THE patient, who was sent to Dr. Andrews by Dr. Herman and Dr. O. R. M. Wood, was aged 37, had been married thirteen years, and had had no children or miscarriages. The catamenia began at thirteen, and were quite regular until nine years ago, when she had nine months' amenorrhœa. During these nine months she had frequent attacks of abdominal pain, which used to double

her up and make her vomit. The abdomen became as much enlarged as in an ordinary pregnancy, but the enlargement was more marked on the left side than on the right. Movements of the fœtus were felt up to the end of the nine months, when pains like those of labour came on, lasting twenty-four hours, accompanied by a "show." There was no result from these pains except that the patient became rather collapsed, and the cervical canal was slightly dilated. After this "spurious labour" the patient lost a small quantity of blood for a week or two.

For the next eight years the patient's health was excellent, and she was free from abdominal pain. The abdominal swelling became somewhat smaller. The catamenia were perfectly regular. When she was admitted into the London Hospital in June, 1903, she had missed three periods, and had had a good deal of vomiting. She considered herself to be pregnant again.

The breasts showed signs of activity. A very hard, irregularly rounded tumour was found rising out of the pelvis up to a point three finger's breadths above the umbilicus. It was much more on the left side than the right.

Per vaginam the cervix, which was soft, was felt to be displaced to the right by a soft swelling, which was situated below and to the left of a rounded mass of almost stony hardness, which was filling up the brim of the pelvis. This soft swelling, whose size could not be estimated on account of the hard, fixed tumour above it, was thought to be the body of the pregnant uterus, and the hard tumour was diagnosed as a lithopædion. It was evident that pregnancy could not continue, so Dr. Andrews decided to operate.

On opening the abdomen a lithopædion of almost full size was found. The right half of the peritoneal cavity was comparatively free. The left half was almost obliterated by adhesions between the fœtus and the omentum and peritoneum of the abdominal wall. The

head of the fœtus was firmly fixed in the pelvis. The whole breadth of the great omentum was adherent to the breech and legs of the fœtus. The back of the fœtus was adherent to the anterior abdominal wall, some of the adhesions being tough and fibrous, others soft and filamentous. The abdomen and arms of the fœtus were practically non-adherent. While the head was being separated from its adhesions in the pelvis a gush of blood came from the left side of the pelvis low down. It was seen that there was another fœtus, of about three and a half months, hanging out of a rent in the posterior layer of the left broad ligament, from which blood was pouring. The left Fallopian tube and the greater part of the left broad ligament, containing a placenta, were then removed. The small fœtus was apparently living up to the time of the operation. The right tube was thick and tough, about eight inches long, and firmly attached by its fimbriated extremity to the right shoulder of the lithopædion. The right broad ligament was thick, tough, and opaque. Removal of the left tube and the greater part of the broad ligament left a raw surface deep in the pelvis, with numerous oozing points. The cavity was lightly packed with iodoform gauze, which was removed on the fifth day. The patient made an uninterrupted recovery, and left the hospital on the twenty-fourth day.

The larger fœtus, a male, measures seventeen inches in length, and weighs 3 lbs. 5 oz. It is well formed. It is enclosed in amnion and chorion, which closely embrace it. The placenta, which measures four and a half inches in diameter, is loosely adherent to the right side of the back, and must have been attached to the anterior abdominal wall. There was no "sac" enclosing the fœtus. It was impossible to say anything about the connection between the placenta and the right Fallopian tube except that the fimbriated extremity was adherent to the right shoulder of the fœtus close to the edge of the placenta. The head is extended on the trunk, and there is much overlapping of the cranial bones. The thighs and legs are flexed.

The skin of the back where it was in contact with the placenta is little altered. On the rest of the surface there is a varying amount of calcareous deposit in the skin. The hair has become separated from the scalp, and is lying mixed with some fatty tissue along the back of the neck. The fœtus is rather brittle; the left hand was broken off at the wrist during the separation of adhesions. Except for the marked change in the shape of the head the fœtus is extraordinarily little altered. There are no adhesions between the skin and the amnion, and there is no calcareous deposit in the membranes.

The smaller fœtus, also a male, is three and three-quarter inches in length.

In answer to a question of the President's, Dr. Andrews said that cases of repeated tubal pregnancy were not very uncommon, nor were cases in which an extra-uterine fœtus had been carried for many years in the abdomen without causing trouble. There had also been instances recorded of uterine pregnancy occurring in a woman carrying a lithopædion. This case of left-sided tubal pregnancy, occurring while there was present in the abdomen a lithopædion resulting from a full-time, right-sided, extra-uterine pregnancy of eight years before, was, as far as Dr. Andrews had been able to find, unique.

UTERINE MYOMA UNDERGOING RED DEGENERATION.

Shown by Dr. Victor Bonney.

Dr. Victor Bonney showed a specimen of a myoma undergoing red degeneration. He had removed it together with the uterus from a patient aged 42. The tumour had existed for some years without any symptoms, but during the last six months had increased in size and become very painful.

Microscopic sections of the tumour showed diffuse

necrobiotic change, with disappearance of nuclei and degeneration of the muscle-fibres.

Dr. Bonney pointed out that in the peculiarly rapid onset of symptoms after a long period of latency, in the presence of well-marked fever, and in its macroscopical and microscopical structure it was an excellent example of this form of degeneration, to which the observations of Fairbairn and others had lately directed attention.

THE FATE OF THE OVUM AND GRAAFIAN FOLLICLE IN PRE-MENSTRUAL LIFE.

By Thos. G. Stevens, M.D.(Lond.), F.R.C.S.(Eng.), M.R.C.P.(Lond.).

(Plates XIV to XXII.)

It has been stated and apparently accepted as a fact that some Graafian follicles do not lie latent in the ovary from birth until puberty, and it has been suggested by Waldeyer (1), Beigel (2), and others that a process of ripening occurs, to be followed by atrophy and the formation of a kind of corpus luteum. The number of Graafian follicles contained in the ovaries at birth has been estimated at 70,000, and all observers are agreed that there are considerably less in the ovaries at puberty. The actual figures referred to must be viewed with some scepticism, because the enumeration of the Graafian follicles in an ovary cannot be a matter of any certainty, and there must be a large margin for errors of observation. However this may be, there is not the slightest vestige of a doubt that large numbers of Graafian follicles do disappear between birth and puberty. On the other hand, very few, if any new follicles are formed after birth; sections of the ovaries of new-born children very seldom show ova and follicles in process of formation.

While the disappearance of Graafian follicles is accepted by all, the amount of literature actually bearing on this point is surprisingly small. A prolonged search through the papers dealing with work on young ovaries has not yielded much which throws any light on the method by which the ova and follicles disappear. De Sinéty (3) describes infants' ovaries which show all stages of maturation up to what may be called ripeness (as far as pre-menstrual ovaries go), and although he mentions that retrograde changes occur, he does not make it clear how these take place. Slavianski (4) is largely quoted in respect to retrograde changes in Graafian follicles, but all his papers deal with adult ovaries and the retrograde changes in Graafian follicles which fail to burst and discharge their ova. Schotlaender (6), too, describes well the development of the egg and follicle, but does not go deeply into the question of retrograde changes. One of Schotlaender's plates, however, is very interesting, as it shows an ovum with an included cell which corresponds closely with one of the stages of retrogression of the ovum which will be described in this paper. Schotlaender does not appear to have attached much importance to this specimen, except that he considered it worthy of record in a drawing. Paladino (7) describes the atrophy of Graafian follicles and ova in young females, but apparently his specimens were obtained from females after puberty. Henneguy (8), in an interesting paper, goes fully into the retrograde changes in Graafian follicles in animals of various species; his specimens do not include those from human infants. However, one of his plates is interesting, as it shows an ovum with included cells something like the appearances to be described later. This ovum was not human. Balfour (9), too, shows an ovum with an included cell, but does not touch upon retrograde changes in infantile ovaries. Many other authors, among them Loewenthal (10), Virchow (11), Cadiat (12), Langhans (13), Pflüger (14), Laulanie (15), Pettitpierre (16), Nagel (17), Alexandrini (18), Van Spee (19), von Kölliker (20), McLeod

(21), Van Beneden (22), Grohé (23), have contributed excellent papers on the subject of the ovary in animals and human beings, but in none of them are the maturation and retrograde changes in Graafian follicles of infants fully described.

The researches, the subject of this paper, were undertaken to try and determine to what degree the Graafian follicle does mature in pre-menstrual life, and if possible to show the retrograde stages until a scar is formed, and also to show what becomes of the ovum during these retrograde changes. The material for these investigations—upwards of seventy pairs of ovaries of children of various ages (but always under ten years, so as to eliminate the possibility of menstruation having been established)—was collected from the post-mortem rooms of Guy's Hospital and the Evelina Hospital for Sick Children, with occasionally specimens from other places sent by friends. The method of preparation of the earlier specimens was simple hardening in alcohol after cutting the ovary in two in its long axis. This was not found to be very satisfactory, and so the later specimens were fixed *whole* in saturated solution of corrosive sublimate, and then the hardening carefully completed in alcohols of increasing strengths, beginning at 30 per cent. and ending with absolute. In the earlier specimens it was found that hemisection of the ovary nearly always opened the larger follicles, which of course were the most important to keep entire, the contents nearly always being lost after section. When, however, the ovaries were hardened whole and embedded whole in paraffin good results were obtained, and the various stages of development to be described were almost always found. The human ovary is always a most difficult object to cut good serial sections of, and embedding them whole does not make the process any easier. However, by paying great attention to thorough dehydration and slow saturation with paraffin at as low a temperature as possible consistent with its melting-point, it was found to be possible to cut good serial sections.

There is no doubt that the results to be described depend entirely on the method of fixation and embedding; no complete series of changes in Graafian follicles can be obtained if the ovaries are first cut in half. One cannot but believe that this is the reason why these changes have not been previously completely described. Various stains were used for the sections, but on the whole hæmatoxylin and eosin or carmine and picro-nigrosin were found to give the best results. Eosin was found to be especially useful as a counter-stain in those specimens in which it was required to stain blood-vessels and blood-corpuscles.

Before describing the various steps by which the Graafian follicle matures and then gradually disappears, leaving a fibrous scar, it may be said at once that no rupture of the follicle takes place, and nothing in the least approaching the structure of a corpus luteum is formed. The follicle and contained ovum matures up to a certain point by definite steps, then a kind of phagocytosis takes place by which the ovum is removed, and finally the contents of the follicle are absorbed by a species of granulation tissue which forms in its wall. From this granulation tissue new connective tissue is formed, which gradually fills up the cavity, and seems to contract as the cavity becomes less and less; at last nothing remains but a cicatrix, with very few cellular elements in it.

It is not intended to touch upon the development of the Graafian follicle and primordial ova in this paper; the researches of Waldeyer (1) and Foulis (24), which have been confirmed by many others, seem to be sufficiently convincing to require no further confirmation or criticism. But nevertheless it is interesting to note that in all these specimens there is little or no evidence of any actual formation of new Graafian follicles going on, and so it would appear that the oft-repeated statement is true in general, that all the ova are formed before or just after birth. If a complete section in the long direction

of a child's ovary is examined, it will be found at once that there are many follicles present in different stages of development. The youngest follicles will be found all over the surface of the ovary, and especially at the two ends, where many layers of follicles will be found, all at the same stage of development. As the follicle begins to enlarge, it will be found deeper in the substance of the ovary. The largest follicles, sometimes as much as 5 mm. in diameter, approach the surface, not with a view to rupture, but simply because the ovary is not large enough to contain them otherwise. It is interesting to note that it is not uncommon to find quite young children's ovaries containing several very large follicles,—for instance, the two (from different children) shown in Fig. 14, drawn three times their natural size. These are in no way pathological, and there is plenty of evidence to show that such large follicles do eventually contract without bursting, and finally form a fibrous scar. Such ovaries no doubt have often been described as cystic, and have been looked upon as pathological erroneously.

The youngest Graafian follicles, those which may be termed dormant follicles, together with their contained ova, measure on an average ·0325 mm., this measurement practically being that of the ovum itself, as the covering of the follicle consists at this stage of flattened cells only, closely applied to the ovum. There is no particular evidence here of a proper fibrous tunic to the Graafian follicle, and the flattened cells look like and stain in the same manner as the connective-tissue cells of the ovary around them. The ovum usually shrinks a little away from the follicle, no doubt on account of the method of preparation of the specimen. The more carefully the ovaries are fixed before cutting sections the less shrinkage will be seen. At this stage there is no evidence of a zona radiata surrounding the ovum. The nucleus of the ovum measures on an average ·013 mm. in diameter, and there is a well-marked nucleolus present (Fig. 1).

Fig. 2 shows the first stage undergone by the dormant

follicles towards maturation. The most marked change seen is that the flattened cells surrounding the ovum proliferate, the number of cells in the specimen shown being treble the average number in a dormant follicle. At the same time the cells are altered in shape, so that they now assume a cubical form, and look much more like an epithelial lining to the follicle. This marks the first appearance of the membrana granulosa. The cell bodies at this stage are small as compared with the nuclei, and are therefore very little in evidence. The particular follicles shown in the drawing are somewhat flattened, no doubt in preparation of the specimen. The ovum here measures ·045 mm. long by ·025 mm. broad. The ovum practically fills the follicle as in the dormant follicles. The nucleus is a little larger than that of a dormant ovum, and measures ·02 mm. in diameter. There is no fibrous tunic yet developed, although here and there concentric fibres can be seen, which look as if the fibrous tunic was beginning to form. The figure shows well how the flattened cells increase in number and size to form the membrana granulosa, three distinct stages being present in the drawing. These follicles are the furthest away from the surface of the ovary; the deeper ones always appear to begin to mature first.

Fig. 3 marks an important stage in the maturation of the Graafian follicle. It shows a further proliferation of the now well-marked membrana granulosa, the formation of a zona pellucida (zona radiata) to the ovum, and the appearance of a well-marked fibrous tunic to the Graafian follicle. The membrana granulosa, mostly two-layered, consists of cubical cells whose bodies are still inconspicuous, and whose nuclei are elongated in a radial direction. The zona radiata of the ovum appears to be incompletely formed, and has on its outer surface small pointed projections, which extend between the cells of the membrana granulosa. The ovum measures ·065 mm. in diameter, and the nucleus ·025 mm. in diameter. The follicle is now obviously larger than the ovum, and

measures ·115 mm. in diameter. The fibrous tunic of the Graafian follicle appears to be forming, and is obviously a concentric arrangement of the ovarian stroma cells which surround the follicle. There are no obvious blood-vessels in the fibrous tunic.

Fig. 4 shows general enlargement of the follicle due to the great proliferation of the cells of the membrana granulosa. These cells have the same character as before, and here and there among them can be seen spaces filled with coagulated material which, no doubt, represents the commencement of the formation of liquor folliculi, apparently appearing at four or five places among the cells. The follicle now measures ·18 mm. in diameter, the ovum has increased to ·075 mm. in its longest diameter, and the nucleus remains at ·025 mm. in diameter. The zona radiata is the same thickness all round, and shows similar pointed projections to those shown in the last figure. The fibrous tunic in this particular specimen is not very well marked.

Fig. 5 shows great enlargement of the follicle, owing to the formation now of a large quantity of liquor folliculi, great proliferation of the membrana granulosa, and a well-marked discus proligerus. The cells of the membrana granulosa now have more obvious cell bodies. The follicle now measures ·39 mm. long by ·33 mm. broad, the ovum ·09 × ·075 mm., and the nucleus ·03 × ·025 mm. The pointed projections on the zona radiata are still seen.

Fig. 6 shows still more enlargement of the follicle, the liquor folliculi being relatively greater in amount, the cells of the membrana granulosa proliferated still more, and thinned out on the side away from the discus proligerus. The follicle now measures ·8 × ·7 mm., the ovum ·1 × ·095 mm., and the nucleus ·03 mm. in diameter. This ovum apparently has reached the maximum size found in children's ovaries; at all events, it is the maximum size found and measured in this series of specimens. As the

mature human ovum from an adult is stated in text-books to measure about ·2 mm., it would seem that the ovum in pre-menstrual life does not reach the same size as it does in adults; this no doubt might be expected. The cells of the membrana granulosa in this specimen have well-developed cell bodies. The fibrous tunic is well marked, but does not materially differ from the ovarian stroma around except that more blood-vessels are seen in it than is commonly seen in the ovarian stroma. This marks the commencement of that vascularity which will give rise later to a species of granulation tissue. This Graafian follicle may be taken on the average as the size of the mature follicle in pre-menstrual life, and at this point in general retrograde changes begin. However, at this stage it appears that there is often an excessive amount of liquor folliculi produced, giving rise to such an enormous enlargement that the size of 5 mm. in diameter or more may be reached. In these larger follicles no further development of the ovum is found, and the appearance of the ovum and discus proligerus remains the same, the only difference being that the membrana granulosa becomes more and more thinned out on the side away from the discus proligerus, and may be represented by a single layer of cells only. The proof that these very large follicles are physiological and not pathological has not been absolutely made out in this research, but it seems more than probable. These large follicles show the great vascularity of the fibrous layer, and sometimes show definite commencement of granulation tissue. The largest contracting follicle measured is shown in Fig. 12, and measures 1·1 mm. in its longest diameter. It may be confidently supposed that contraction occurs very rapidly, and so this follicle must have been considerably larger than 1·1 mm. in diameter when at its greatest size before contraction began. In any case, it must have been much larger than the mature follicle shown in Fig. 6. Not uncommonly retrograde changes begin in follicles smaller than that in Fig. 6. For instance, in Fig. 7 retrograde

changes are obviously well advanced, because the ovum is being destroyed by phagocytic cells, and yet the follicle only measures ·23 mm. in diameter. In some of the specimens even smaller follicles than this can be seen undergoing retrograde changes.

Retrograde changes.—These must be described, as they affect the ovum, the membrana granulosa, and the wall of the follicle. The ovum can generally be recognised in the contracting follicles if sufficient serial sections are cut. Fig. 7 shows the commencement of the invasion of the ovum by cells which appear to act as phagocytes. In this specimen the zona radiata is closely beset on one side by cells of the membrana granulosa, and appears to be thicker than usual. In disintegrating ova as a rule the zona radiata appears to be thicker than usual, as if it were swollen by imbibition of some fluid substance. This is shown in Figs. 7, 8, and 9. In the ovum itself of Fig. 7 there are four cells to be seen which have destroyed a part of the ovum itself, a lunated outline of the ovum abutting on these cells. The ovum is shrinking away from the zona radiata all round. The zona radiata appears to be the most resistent part of the ovum, for in most of the specimens observed it seems to be the last part of the ovum to be completely destroyed, and retains its staining powers a long time after the main body of the ovum is disintegrated. Fig. 8 shows a somewhat similar condition, but here the change has advanced further, as the interior of the ovum is entirely occupied by these invading cells, seven in number. The next section in series on this slide shows how these invading cells have got into the ovum. The zona radiata is deficient at one side, as if it had been broken down by these cells; and then, as it appears to be very resistent, more cells have passed in instead of destroying more of the zona radiata. In some specimens only the zona radiata can be seen, both the ovum and the invading cells apparently having disappeared. The invading cells have uniformly similar characters wherever they are seen,

They have spherical bodies ·01 mm. in diameter on the average, their protoplasm is vacuolated as if they were swollen up with drops of fluid, and their nuclei are slightly oval and apparently absolutely identical with those of the cells of the membrana granulosa. The nuclei of these cells are generally displaced to one side, as if crowded out by the vacuoles. The origin of these cells is a question of great physiological interest, because all the appearances point to their identity with the cells of the membrana granulosa. There are two possibilities with regard to their identity; they may be membrana granulosa cells, or they may be leucocytes. With regard to the second possibility, these cells are quite unlike any of the usual forms of leucocytes, either the polynuclear, the lymphocytes, or the eosinophiles. The character of the nucleus is the chief determining point in this, because with regard to the size there is not much difference. If these cells are leucocytes there should be some evidence in the sections of diapedesis, as showing the origin of them from the capillary vessels; but a prolonged search has not shown a single place where a leucocyte can be seen emerging from a vessel. On the other hand, the nuclei of these cells are identical in appearance with those of the cells of the membrana granulosa, and in many specimens these cells can be seen among those of the membrana granulosa, various sizes being present, as if the essential change was simply one of swelling of the cell body from ingestion of fluids. From these considerations it appears that these cells really are identical with those of the membrana granulosa. There is no reason why the cells of the membrana granulosa should not take to themselves the properties of phagocytes; every recent research points to the fact that it is not only the white blood-cells which exert phagocytic powers, but that others, such as the endothelial cells of blood-vessels, may have the same properties. All these cells owe their common origin to the mesoblast, and from our knowledge of the transmutation of epithelial cells it must be admitted that

it is at least possible for the cells of the membrana granulosa to become phagocytes. In some follicles very large numbers of these cells are seen, all having the same characters; they cannot all take part in the destruction of the ovum, and it must be said that the functions exercised by these large numbers of cells are by no means clear. It may possibly be that they absorb some constituent of the liquor folliculi. The ultimate fate of these cells is clear in the sections. They undergo necrobiosis, the nuclei gradually lose their staining powers, the cell bodies lose their distinct outline, and eventually they break up and no doubt are absorbed by the granulation tissue of the fibrous layer of the follicle. All stages of disintegration of these cells can be seen in the sections. In some of the sections the ovum seems to undergo necrobiosis without invasion by the cells of the membrana granulosa, but as a rule one or two solitary cells can be seen in the ovum. The first method is without doubt the common one by which the ovum is got rid of.

The fate of the membrana granulosa will be partly gathered from what has been already said, but all its cells do not give rise to these swollen phagocytic cells. Many of the cells of this layer disintegrate without any further change, and fragmentation of the nucleus, loss of staining properties, and general break-up of the cell seems to be the fate of the majority. The first noticeable change in this layer as a whole is a shrinking away from the fibrous tunic of the follicle, thus losing its supply of nutriment. Then some of the cells become phagocytes, and others simply break up. In any case, before much contraction occurs in the follicle nearly all of the cells of the membrana granulosa have disappeared.

The fibrous tunic of the Graafian follicle, as has been already shown, is but little marked in the earlier stages of development; it later undergoes a well-marked series of changes which results in the formation of a kind of granulation tissue. The first change noted is increase of

capillary blood-vessels in the fibrous coat, sometimes to a remarkable degree. This is well shown in Fig. 10, which is a drawing of a follicle measuring 1·2 × ·64 mm., in which the membrana granulosa is shrinking away from the fibrous wall. Along with this increase in the vessels there is a proliferation of the connective-tissue cells in the fibrous tunic, the whole producing a richly cellular, very vascular tissue, extending equally all round the follicle. This layer is easily distinguished from the membrana granulosa by the presence of so many vessels in the former, while there are none in the latter. This layer rapidly increases in thickness, and the blood-vessels form definite capillary loops, such as one constantly associates with granulation tissue. Between the capillary loops the cells arrange themselves in a more or less radiating manner, with their long axes at right angles to the wall of the follicle. This tissue is well shown in Fig. 9; the great thickness of this tissue and the fairly sharp line of demarcation between it and the ovarian stroma is obvious. At the same time what may be termed the "indifferent layer" develops on the surface of this tissue towards the follicle. Apparently this layer consists of coagulated lymph thrown out from the blood-vessels, and in it new connective tissue begins to form in the follicle. Fig. 9 is also interesting, because it shows, in addition to the granulation tissue and contraction of the follicle, the ovum full of phagocytic cells, and the production of new fibrous tissue, all these changes going on at the same time.

Fig. 11 shows very well a portion of one of the capillary loops, with the radiating cells and new connective tissue forming inside the "indifferent layer." The whole follicle at this stage is shown in Fig. 12, which is a drawing of a follicle measuring 1·12 × ·83 mm. Here can be seen the granulation tissue, "indifferent layer," and new delicate connective tissue forming inside the follicle, and gradually filling it up. The projection into the follicle is no doubt a spur of granulation tissue and

DESCRIPTION OF PLATE XIV,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 1.—Young "dormant" ova. Average size ·0325 mm. in diameter. × 300.

FIG. 4.—Enlarging Graafian follicle. Membrana granulosa many layered. Ovum measures ·075 mm. in diameter. Follicle measures ·18 mm. in diameter. × 220.

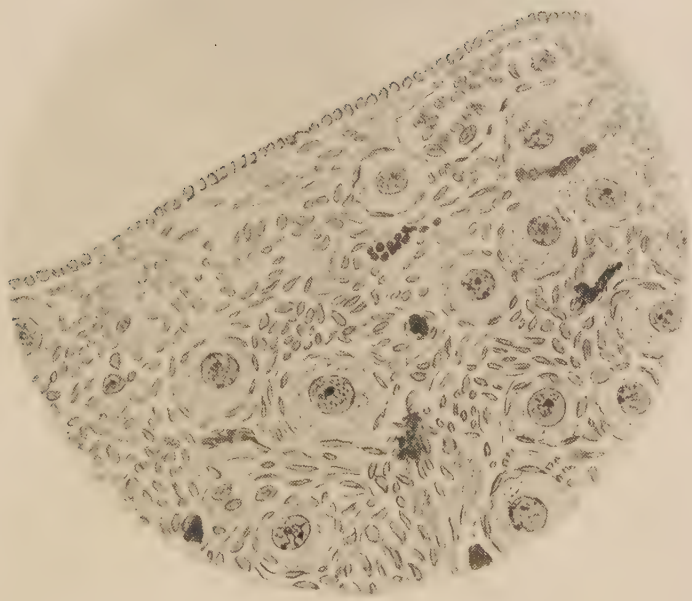


Fig. 1.

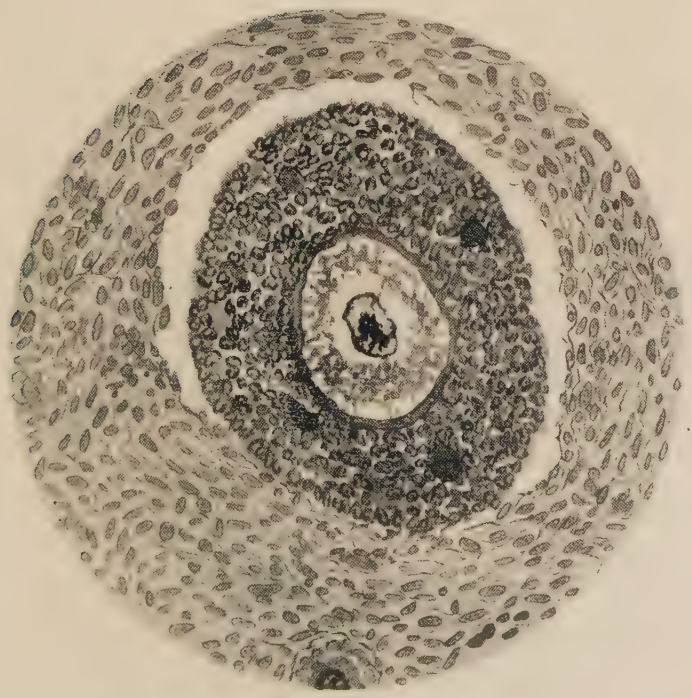


Fig. 4.

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DESCRIPTION OF PLATE XV,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 2.—First changes in Graafian follicle. Ovum measures ·045 × ·025 mm. Three stages of growth shown. × 300.

FIG. 3.—Enlarging Graafian follicle. Membrana granulosa two-layered. × 300. Ovum measures ·065 mm. in diameter. Graafian follicle measures ·115 mm. in diameter.

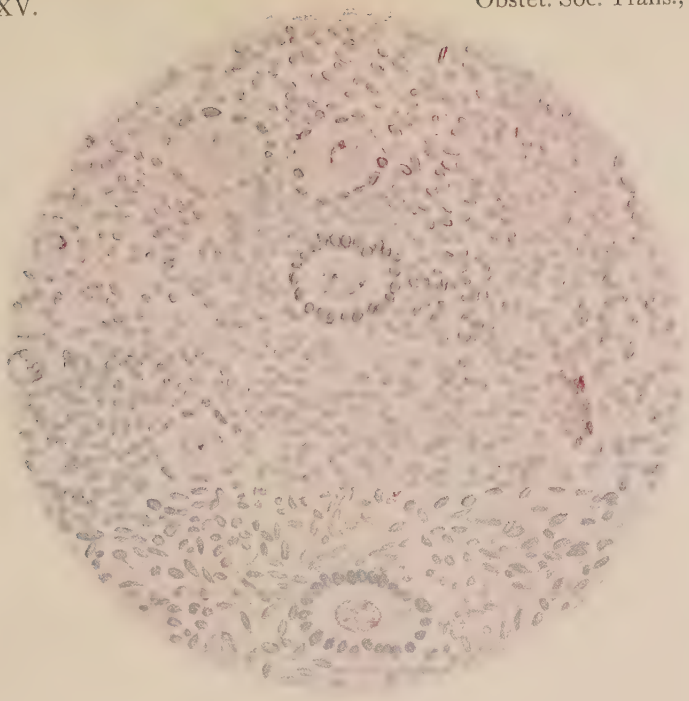

Fig. 2.

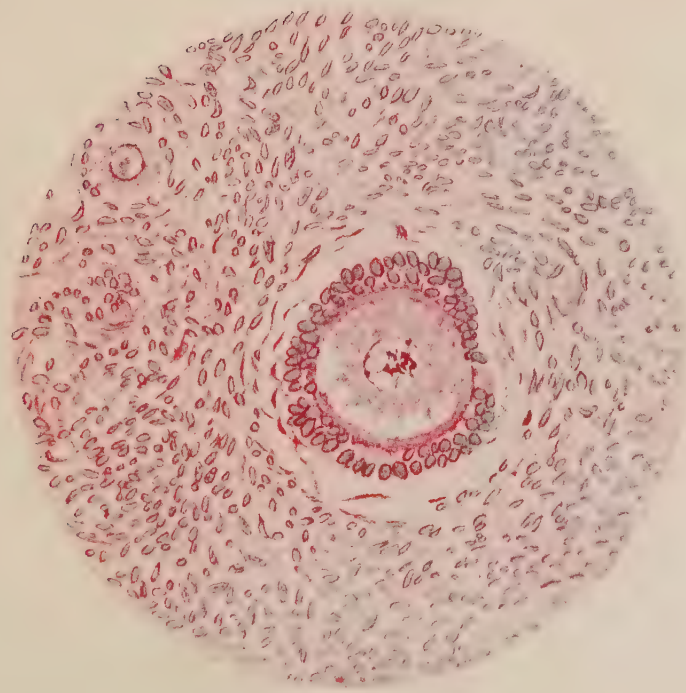

Fig. 3.

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DESCRIPTION OF PLATE XVI,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

Fig. 5.—Enlarging Graafian follicle. Liquor folliculi. Discus proligerus. × 280. Ovum measures ·09 × ·075 mm. in diameter. Follicle measures ·39 × ·33 mm. in diameter.

Fig. 5.

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DESCRIPTION OF PLATE XVII,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 8.—Retrograde changes. Invasion of ovum by phagocytic cells. × 270. Membrana granulosa breaking up.

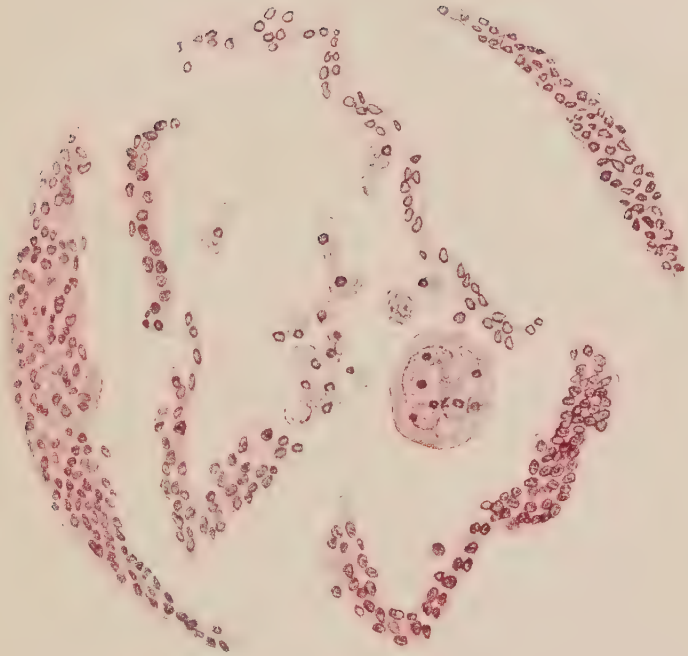

Fig. 8.

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DESCRIPTION OF PLATE XVIII,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 6.—Fully formed Graafian follicle and ovum. × 100. Ovum measures ·1 × ·095 mm. Follicle measures ·8 × ·7 mm.

FIG. 7.—Retrograde change. Invasion of ovum by phagocytic cells. × 310. Disappearance of membrana granulosa. Follicle measures ·23 mm. in diameter.

Fig. 6.

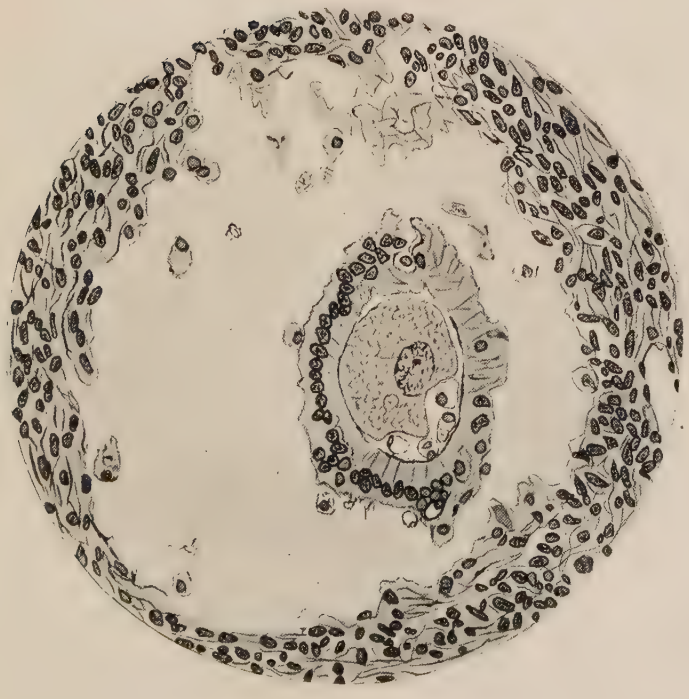

Fig. 7.

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DESCRIPTION OF PLATE XIX,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 9.—Retrograde changes. Ovum, phagocytic cells, contracting Graafian follicle, granulation tissue. × 73.

FIG. 10.—Retrograde changes. Commencing granulation tissue in fibrous tunic; very large blood vessels. × 75.

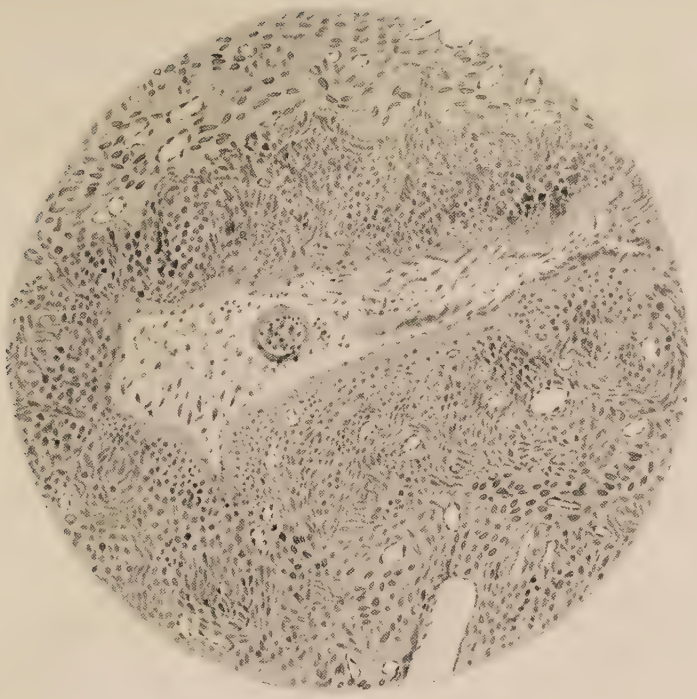

Fig. 9.

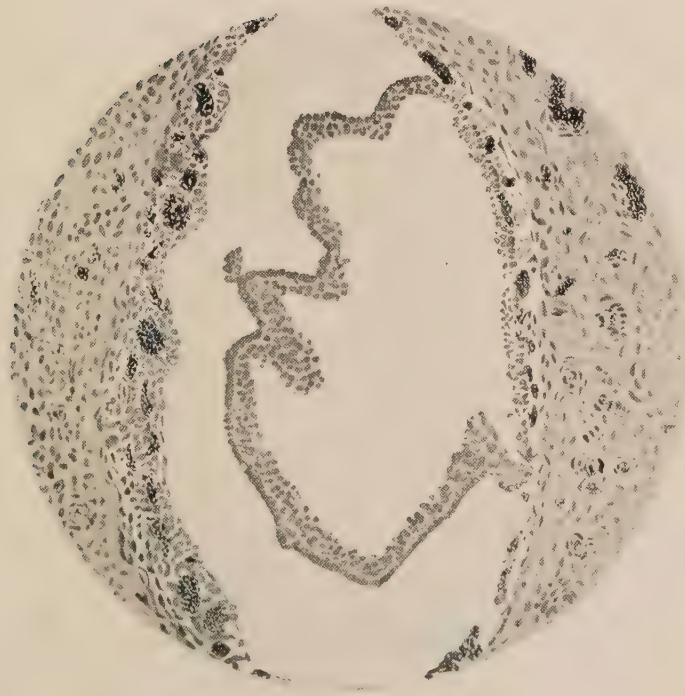

Fig. 10.

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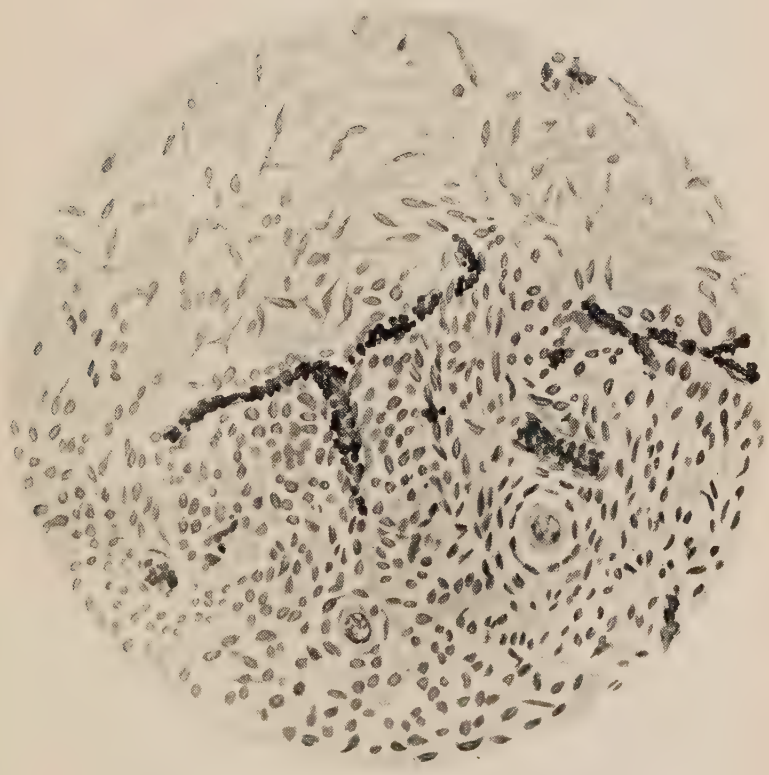
DESCRIPTION OF PLATE XX,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 11.—Retrograde changes. Capillary loop in granulation tissue of contracting follicle. New fibrous tissue filling up follicle. × 280.

Fig. 11.



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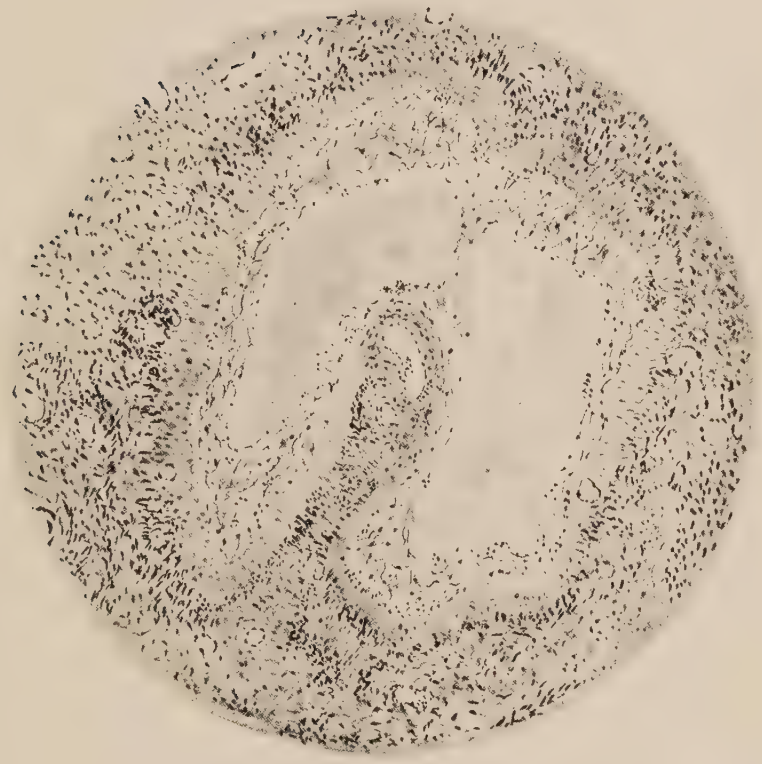
DESCRIPTION OF PLATE XXI,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 12.—Retrograde changes, contracting follicle, granulation tissue new fibrous tissue. Follicle measures 1·2 mm. × ·64 mm. × 62.

Fig. 12.



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DESCRIPTION OF PLATE XXII,

Illustrating Dr. Thos. G. Stevens's paper on "The Fate of the Ovum and Graafian Follicle in Præ-menstrual Life."

FIG. 13.—Retrograde changes. Nearly complete cicatrix. Four phagocytic cells not yet absorbed. × 280.

FIG. 14.—Ovaries with many large follicles. × 3.

Fig. 13.

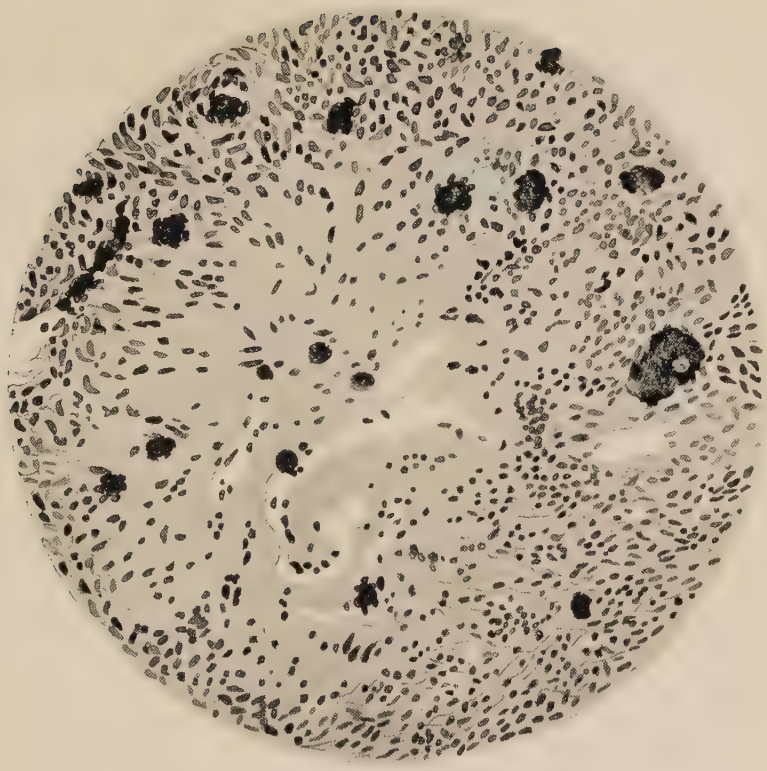
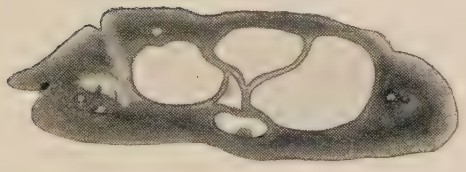
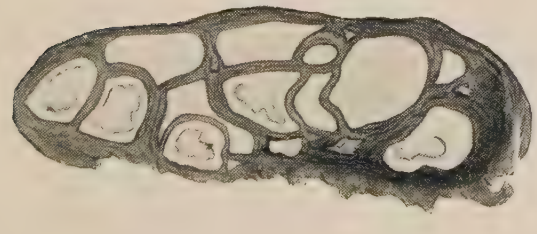


Fig. 14.





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ovarian stroma, no doubt formed by a doubling in of the follicle wall, probably from pressure. In this particular follicle there seems to be nothing much left to absorb except some coagulated fluid left after the membrana granulosa has disintegrated. From this time the follicle fills with connective tissue, upon which the granulation tissue gradually encroaches, compressing it and possibly reabsorbing some of it, so that still later the follicle presents the appearance shown in Fig. 13. Here the granulation tissue can be still recognised in places, the "indifferent layer" can be seen, and the compressed scar tissue inside is obvious. Three large swollen cells can be seen in the drawing, which are no doubt some phagocytic cells which have not yet disintegrated. The blood-vessels now are not so numerous; they have apparently done their work, and seem to have contracted from pressure of scar tissue.

The final result of the process is a small knot of scar tissue which can easily be recognised, but which is of variable size, possibly depending on the original size of the follicle at its maturity. In Fig. 13 the follicle only measures ·26 × ·21 mm. Scars of this size can be seen in all children's ovaries, but when further contraction occurs there may be some difficulty in recognising these structures. Small corners cut off larger scars might easily appear as final results of cicatrisation, so that it is important to carefully examine serial sections before arriving at a decision with regard to the smallest scars. In general these scars leave no trace on the surface of the ovary, but it is not uncommon to find slight infolding of the surface. When this occurs it probably means that the follicle was much larger than usual before contraction began. The two sections of ovaries shown in Fig. 14, which are drawn three times their natural size, could hardly be expected to show no infolding of the surface when such large follicles contracted. There is no doubt that when such large follicles are found the retrograde changes are postponed for some reason, and the

large size is due to great development of liquor folliculi. Beyond this pouring out of fluid there is no evidence of a pathological change. In none of the seventy pairs of ovaries examined was there any evidence of an adenomatous transformation. A very large proportion of these ovaries contain follicles from 2 to 3 mm. in diameter, and from this frequent occurrence it cannot be supposed that they are in any way pathological, especially as many of them already show commencing granulation tissue in their walls preparatory to contraction and absorption.

It is interesting to speculate as to the reason for these series of changes in the ovaries of infants.

In the present state of our knowledge of the functions of the ovary we are forced to conclude that this organ plays a dual *rôle*, namely, that of supplying the female sexual cells and the production of some internal secretion which is essential to the well-being of the female up to a certain age. It is clear that the supply of sexual cells is unnecessary in infants, and so the follicles do not burst, but it is not certain at all that the internal secretion is unnecessary. In all probability this plays an important part in the development of the female child. It may be conceived that these constant changes in the Graafian follicles are in some way the source of this internal secretion. At present, however, we have no evidence to offer in favour of this, and it must remain but a most fascinating theory.

Conclusions.

1. The Graafian follicles and ova in pre-menstrual life mature by a constant well-marked series of changes.

2. The ovum never reaches the same size as that of an adult female.

3. The size of the correspondingly mature Graafian follicle is variable, but usually measures about ·8 to 1 mm. in diameter.

4. The ovum is removed by a kind of phagocytosis as a rule, but may undergo simple necrobiosis.

5. The phagocytic agents are the cells of the membrana granulosa.

6. The follicle eventually contracts by means of granulation tissue formed in its fibrous tunic, which eventually absorbs the remains of the membrana granulosa and liquor follicles.

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Dr. Eden wished to express the admiration he felt for the fine piece of work which Dr. Stevens had laid before the Society that evening. The labour involved in the examination of 70 pairs of ovaries by serial section was enormous, and the author deserved the greatest credit for the time and patience which he had bestowed upon the work. The field covered by the research was entirely new, so far as his knowledge went, and Dr. Stevens could quite fairly claim the credit of being a pioneer. The most interesting part of the demonstration consisted in the method by which the ovum was disposed of in the contracting follicles. If Dr. Stevens's view were correct, the normal protective and nutritive functions of the cells of the membrana granulosa became suddenly suspended when the follicle had reached a certain stage of development, and destructive functions were exercised by the same cells instead. This reversal of the direction of physiological activity was, to say the least, very remarkable, and it had no analogue in any other part of the body. But he felt bound to say that he was not absolutely convinced that the destructive cells were really cells of the membrana granulosa. He thought it possible, notwithstanding Dr. Stevens's arguments, that they might be leucocytes. The weak point in the author's case consisted in the fact that his material was all post-mortem material. No importance could therefore be rightly attached to the absence of signs of diapedesis; this was a vital process, and could not be studied in dead tissues. Further, he thought it possible that the staining reactions of the destructive cells might be entirely different if they could be obtained in the living state. Perhaps Dr. Stevens could arrange to carry out a few control observations upon operative specimens, or even upon the ovaries of young mammals—monkeys by preference.

Dr. Peter Horrocks thought the paper was conceived in a scientific spirit, and that the address had been delivered in an admirable manner. He asked if the slides as shown on the screen represented not merely different degrees of development of the ovum, but also different ages of the children from whom the ovaries had been taken. Thus, was the fully developed ovum from the oldest child, and the most immature from the youngest? At present it seemed a very strange thing, if Dr. Stevens's observations were correct, that the ovaries should develop ova up to a certain degree of maturity, and then develop cells to devour

them. He thought it would be of great scientific value, and that it might throw fresh light upon the whole question, if Dr. Stevens would continue his researches into the condition of the ova developing in ovaries of girls right up to the full establishment of puberty.

Dr. C. Hubert Roberts added his testimony to that of other speakers as to the excellence of the paper, and especially the microscopical drawings. Dr. Roberts asked for further information with regard to the origin of the liquor folliculi; he (Dr. Roberts) did not think Dr. Stevens had made it at all clear as to what was the exact process of degeneration which the cells of the membrana granulosa underwent, or if it was a degeneration at all. As to the entrance of certain cells into the zona pellucida of the ovum itself, Dr. Roberts was inclined to think the cells depicted were rather of the nature of leucocytes than those of the membrana granulosa, and that the process resembled phagocytosis to a considerable degree. As to the last section shown (the cystic ovaries of a child), Dr. Roberts regarded these cysts as rather pathological than physiological. Dr. Roberts was well acquainted with such ovaries; and it was not very uncommon to find bilateral cystic disease of the ovaries in young children. Cystic disease is certainly a morbid condition, and there were several such specimens in the Royal College of Surgeons' Museum, one of which Dr. Roberts had drawn in his book on 'Gynæcological Pathology.'

Dr. Blacker wished to express his admiration of Dr. Stevens's work, and more especially of the very beautiful specimens and drawings which he had shown. He thought that there were several difficulties in the way of accepting Dr. Stevens's views upon the part played by the cells of the membrana granulosa in the destruction of the ovum. Nagel, in his classical work upon the human ovum, had shown that the zona radiata was probably only a part of the innermost layer of the cells of the membrana granulosa, and was really formed from the cell bodies. Dr. Stevens appeared to regard it as a species of exudation from these cells, but had brought forward no evidence in favour of this theory. If Nagel's view was correct, then the cells of the membrana granulosa could hardly be described as breaking through the zona radiata and invading the ovum. Dr. Blacker did not think that the microscopic specimens showed very definite evidence of any such phagocytic action as the author of the paper had described. Further than this, degenerating cells did not as a rule take on such important functions as phagocytosis. He thought that the cells seen apparently lying within the ovum were more probably of the nature of cell inclusions, and both they and the ovum itself were undergoing degenerative changes concurrently. The demonstration of the important part played by the ovarian stroma in the develop-

ment of the final scar tissue was in favour of the view that in the development of the corpus luteum the lutein cells take origin from the connective tissue of the ovary, and not from the cells of the membrana granulosa.

Dr. Victor Bonney remarked that he was particularly interested in the light thrown by Dr. Stevens's researches on the fate of the tunica granulosa. He thought that Dr. Stevens's specimens showed very clearly that in pre-menstrual life the granulosa cells retrograded *pari passu* with the ovum, whilst in adult sexual life they continued to grow after dehiscence of the follicle, and formed the lutein layer of the corpus luteum. He had examined the specimens attentively, and could find in them nothing at all resembling a lutein layer. Seeing that much recent work by various observers tended towards a conception which allotted to the lutein layer the function of producing the internal secretion of the ovary, and seeing further that the most striking point of difference between the child's and the adult's generative organs lay in the fact of the latter possessing a corpus luteum, and the former not possessing it, he thought that Dr. Stevens's work suggested strongly that it was to the persistence and continued growth of the granulosa cells after the disappearance of the ovum from the follicle by dehiscence that we owed that development of sexual characteristics which marked puberty.

CHORIO-EPITHELIOMA FOLLOWING HYDATIDIFORM MOLE IN A PATIENT WITH BILATERAL OVARIAN CYSTS.

By John D. Malcolm, F.R.C.S.Edin., and R. Hamilton Bell, M.B., M.R.C.P.

WITH PATHOLOGICAL REPORT, AND REFERENCES TO THE LITERATURE ON KINDRED CASES

By Cuthbert Lockyer, M.D., F.R.C.S.

(With Plates XXIII—XXV.)

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(*Abstract.*)

The patient came under the care of Dr. Malcolm Mackintosh, of Clapham Common, on April 10th, 1901. She had a rapidly enlarging uterus, from which there were free hæmorrhages on April 9th, 14th, and 19th. The patient asserted that if pregnant she must have conceived on February 17th. Mr. Malcolm saw her in consultation on April 29th, and she was admitted to the Samaritan Free Hospital on the 30th. The first diagnosis was that the patient had a soft rapidly growing fibroid tumour. Subsequently it was thought that the condition might be one of ordinary pregnancy. Dr. Hamilton Bell suggested that there might be a hydatidiform mole. Delivery of the uterine contents being imminent, on May 8th Dr. Bell, after a consultation, emptied and curetted the uterus, the fundus of which was above the navel. A large quantity of hydatidiform material was evacuated. The uterus was again curetted on May 12th. On May 29th the conditions were unsatisfactory, and the diagnosis was uncertain. Mr. Malcolm opened the abdomen and removed two ovarian tumours, the right one having a twisted pedicle.

The condition of the uterus did not seem normal, and it also was removed, the cervix being taken with it. The patient recovered, and has remained well.

Pathological Abstract by Dr. Cuthbert Lockyer.

The pathological interest of this specimen lies, first, in the discovery of two metastatic deposits of chorio-epithelioma in the muscular wall of the uterus three weeks after the removal of a hydatidiform mole; secondly, in the concurrence of bilateral ovarian cysts and malignant vesicular disease of the chorion; thirdly, in the type of cystic ovarian disease. In regard to the latter point the question whether the cysts arose from corpora lutea has not yet been definitely settled. No lutein cells have been discovered in the walls of the few loculi examined, but it is the author's intention to extend this investigation to other loculi before excluding the possibility of corpora lutea being the source of origin of the cysts.

The literature bearing on the ætiology of vesicular mole is referred to, Marchand's view being that cystic ovarian disease may influence the development of the ovum, whilst Veit regards the endometrium as accountable for ovular degeneration, and Findlay disallows an ætiological association between ovarian degeneration and vesicular mole. Other instances where vesicular mole and chorio-epithelioma have been associated with bilateral or single ovarian cysts are mentioned, some of these cases being recorded in full. A bibliographical table will be found at the end of the paper.

The subject of the following notes was the daughter of a woman who died of consumption at the age of twenty-eight, and of a man who died of cancer at the age of sixty-eight. She married when she was nineteen years old, and had a miscarriage four months later. Subsequently she had three children, the youngest being born when she was thirty-two. After that time means were taken to prevent conception, and the patient's periods were regular until March, 1901, when her age was forty. Up to Christmas, 1900, her health was good, but she then began to lose

flesh rapidly. On February 17th, 1901, coitus was effected without any precautions against conception being employed, and the patient positively stated that this was the only occasion on which conception could have taken place. After that date a period was missed, and on April 9th there was a severe hæmorrhage from the uterus, on account of which Dr. Malcolm Mackintosh was consulted. After five days there was another flooding, and five days later a third free discharge of blood occurred, large clots being passed on each occasion. The patient also suffered from nausea, with inability to take food, and Dr. Mackintosh found an abdominal tumour, which in shape and position resembled a pregnant uterus, but which enlarged much more rapidly than a pregnant uterus should.

Dr. Mackintosh asked Mr. Malcolm to see the patient with him on April 29th. At that time she was thin, but not greatly emaciated. Her uterus was enlarged, and of a rounded oval shape, closely resembling that of a pregnant womb, its upper border being above the level of the umbilicus. Behind the cervix uteri the lower part of the enlarged womb felt slightly nodulated, being firmer in some places than in others. The cervix was hard and firm. Neither a fœtal heart nor a uterine souffle was heard on auscultation. The resemblance to a pregnant uterus was obvious, but after considering the case in all its bearings an opinion was expressed that the patient was not pregnant, but that she was suffering from a soft uterine tumour, the removal of which was recommended.

The patient was admitted to the Samaritan Free Hospital on the following day, April 30th, 1901, and at Mr. Malcolm's request Mr. Doran examined her on May 5th. A uterine sound was used, and it went between five and six inches into the posterior part of the mass. Mr. Doran agreed with the diagnosis already made, and with the view that an operation was necessary. This examination was followed by some discharge of blood from the vagina, with considerable pain and vomiting, and on May 7th the temperature, which had been normal,

rose to 100·2°. Removal of the tumour without delay was thought necessary, but before operating Mr. Malcolm asked Dr. Amand Routh to see the patient with him. On May 8th Dr. Routh examined her, and expressed the opinion that she was pregnant, and that she would be delivered on that day. Mr. Malcolm had not examined bimanually during the previous three days, and on doing so now he found a large, soft, dilated os uteri. There seemed to be no doubt that the woman was pregnant and about to be delivered, and the change in the conditions was attributed to the passage of the sound three days earlier. In the afternoon of May 8th the patient was very ill, with a temperature of 103° and a pulse of 150 to the minute. The temperature came down to 102° towards evening, but the pulse remained high and the general condition became worse rather than better. It was decided to empty the uterus, and Mr. Malcolm asked Dr. Hamilton Bell to do this. Dr. Bell carefully investigated the condition and history of the patient before operating, and it occurred to him that he might have to deal with a case of hydatidiform mole.

At 8.30 p.m. on May 8th the patient was anæsthetised, and Dr. Bell introduced his finger through the cervix to its full length. A soft mass which did not bleed very freely was felt, but there was no trace of membranes or of fœtal parts. A small piece of the mass was removed by ovum forceps, and showed the characteristic small cysts of a hydatidiform mole. The uterus was then emptied, curetted, washed out, and packed with gauze. The loss of blood was considerable, and at the end of the operation the patient's pulse was so feeble that it was not possible to count it at the wrist. The patient's condition was so serious that it was not considered advisable to scrape the cavity of the uterus at the right cornu so thoroughly as was desired, and the wall seemed to be left rather thicker than it should be at that part. At this time there was no suspicion of the presence of any abnormal condition outside the uterus.

When the patient was put to bed the temperature was 99·4°, and the heart was beating 150 to the minute. Her condition rapidly improved, however, after a rectal injection of hot water and a hypodermic injection of strychnia were administered. In the night, about 2 a.m., the temperature rose to 102·2°, and the pulse continued very high, but both gradually came down, and by 9.30 o'clock next morning the temperature was 98·4° and the pulse 110. In the evening of the 9th the temperature rose to 100·4° and the pulse was as high as 130 to the minute, but both were lower on the morning of the 10th. On that morning at 11 a.m. the plug was removed from the uterus, and a douche of creolin solution was ordered. The temperature rose to 103·8° in the evening, and the patient complained of headache. The temperature fell to 100·4° at noon on the 11th, and rose again to 101·2° at 9 p.m. At midnight the patient had a severe rigor, lasting eighteen minutes; the thermometer registered a temperature of 107°, and the pulse was very small and rapid, beating about 156 to the minute. By 8 a.m. on the 12th the temperature was subnormal, and the pulse was 90. Two hours later the patient was put under an anæsthetic and Dr. Bell carefully curetted the uterus, paying particular attention to the right cornu, which still seemed to have a thicker wall than any other part of the uterus. The patient was put to bed in a state of extreme collapse, with a temperature which did not raise the index of the thermometer above 97° in the rectum. She had a rigor lasting ten minutes about noon, but she soon rallied. The temperature rose to 102° towards evening, and fell to 98·6° next morning, May 13th, when the pulse beats were 90 to the minute. From this time the temperature did not rise above 99·2°, and it was seldom so high until after the next operation on May 29th, with the exception that on the evening of May 17th it rose to 102°, the elevation lasting about twenty-four hours with a gradual rise and fall. This rise of temperature was accompanied by a good deal of abdominal pain. The pain was chiefly in

the right side of the pelvis. It was felt soon after the first operation. At times the patient was quite free from it, but the pain came and went, and occasionally, as on May 17th, it was severe. The condition of the uterus also varied. Sometimes its right cornu seemed much larger than it should be, whilst at other times there appeared to be a tender mass to the right of the uterus, and separate from it. The patient was very weak, and required careful feeding and nursing; but the bowels acted well, and the discharge from the uterus was not unhealthy and was not great in quantity.

The tender mass in the pelvis became gradually more distinct, and with a view to ascertaining its nature, and, if possible removing it, Mr. Malcolm opened the abdomen on May 29th, Dr. Bell assisting. A cystic tumour of the right ovary, nearly as large as a cocoa-nut, was found, and on the left side there was a similar but rather smaller growth, the presence of which had not been suspected. The pedicle on the right side was twisted, and this was the cause of the pain which attracted attention to the condition. The growths were multilocular, none of the cysts being large, and their walls being very thin. The fluid was clear in most of them, but in some it was dark-coloured.

The uterus was big and flabby, and not quite of the same consistence throughout. As the cause of this was doubtful it was decided to remove the body of the uterus but to leave the cervix, which had always seemed healthy. On cutting across the uterine tissue two abnormal parts were exposed. It was thought that these might be inflammatory in origin, but they also looked like foci of new growth, and on the suspicion that they might be neoplasms, as Dr. Lockyer has shown them to be, the cervix also was taken away. The peritoneum was brought together so as to exclude the raw surfaces from the peritoneal cavity, and a gauze drain was put in the vagina. The patient was much collapsed after this operation, but, as before, she quickly rallied. It required very great care

in nursing to maintain her strength, but the abdominal condition never gave any trouble from a surgical point of view. The temperature rose to 100·8° on the day after the operation. In two days it was below 100°, and it did not rise above that degree afterwards. A bedsore developed and delayed convalescence, but it gradually healed, and the patient left the hospital on July 8th, forty days after the last operation.

Since then she has steadily improved in health. On April 4th, 1903, she wrote that she was able to attend to her household duties, her appetite was good, she slept well, and her general health seemed perfect. She said that in September, 1902, "two stitches came away. There had been a discharge for a few weeks previously but not afterwards, neither had there been any pain, and there was very little inconvenience."

The patient was seen and examined by Mr. Malcolm on June 20th, 1903. All the parts within the pelvis seemed quite healthy. The bowels, the kidneys, and the bladder gave no trouble. A specimen of urine was drawn off by catheter, and the Clinical Research Association reported that the specific gravity was 1013, reaction acid, sugar absent. There was a decided trace of albumen. "The deposit was small in amount, and consisted of numerous calcium oxalate crystals and a little mucin, with a very small number of hyaline casts, and an occasional red blood-disc." The only note made of the condition of the urine when the patient was in hospital states that there was no albumen, but a specimen examined in 1902 showed a trace.

It hardly seems credible that the ovarian growths in this case could have been present during the whole of the time the patient was under observation, and were not detected by any of those who examined her. We know, however, that the left one existed, although its presence was not suspected before the abdomen was opened, and it is fairly certain that both were overlooked until the twisting of the pedicle on the right side made the cystoma on

that side tense and tender. From what is known of the growth of uterine malignant tumours associated with pregnancy it is hardly likely that malignant disease of the uterus existed before the woman became pregnant, and there seems no reason to doubt her assertion that conception occurred on the 17th of February, 1901. But she also distinctly states that she was losing flesh at Christmas, 1900, and therefore it is highly probable that the ovarian tumours existed before that date.

The twisting of the pedicle was a most fortunate complication of the case, as it led to the operation and the removal of the uterus apparently before the malignant disease extended beyond that organ. It seems certain that, but for this early operation, the course of the disease would have been one of steady development and extension, with the formation of secondary deposits outside the uterus, and terminating in the death of the patient. As there is no evidence of recurrence after two years, as the origin of this form of malignant disease is so very local, and as its growth when unchecked is usually very rapid, it seems permissible to hope that a permanent exemption from recurrence may have been secured. If possible the patient will be kept under observation, and it is hoped that a report of her condition may be made to the Society on a future occasion.

The following account of the pathological conditions and references to the literature of kindred cases have kindly been furnished by Dr. Cuthbert Lockyer.

The specimen consists of the entire internal genitalia, viz. the uterus, Fallopian tubes, the broad ligaments, and two ovarian cysts. The uterus is divided just above the level of the internal os into two portions; these, after being united and the organs fixed, give the following measurements:—From fundus to external os 9 cm., from cornu to cornu 7 cm. The wall of the corpus uteri is 2 cm. thick, that of the cervix measures 1 cm. in thickness. The body of the uterus before hardening was remarkably pale, soft, and flabby. The incision, which has divided

the uterus transversely, reveals the presence of two small reddish-yellow areas more or less circular in outline, the one measuring ·5 cm. in circumference, and the other 1 cm. (see Plate XXIV). These areas are situated midway between the mucous and peritoneal coats, in the centre of the muscular tissue of the uterine wall. On shaving off two transverse discs from the upper free surface of the lower half of the uterus, it is found that these nodules extend for one centimetre downwards in the direction of the cervix. Their lower limit reaches practically to the level of the os uteri internum, but they do not invade the cervix. To the naked eye these spots resemble infective thrombotic areas breaking down, *i. e.* there is a central red area surrounded by friable diffluent yellow material; the latter disappears on following the areas towards the cervix, and nothing but the central red spot remains. A further search made by vertical sections through the anterior wall of the body of the uteras reveals nothing abnormal.

The right ovary is represented by a multilocular ovarian cyst. The entire cyst, together with its pedicle, which includes the proximal 5 cm. of the right tube, has a deep purple colour. The cyst is obtusely oval, and measures 9 cm. in its transverse and 7 cm. in its vertical diameter. The loculi have thin walls; some of them are filled with dark blood, others with clear straw-coloured fluid faintly stained with blood pigment. The pedicle includes the ovarian vessels and the uterine end of the tube. It is 3 cm. in thickness, and the vessels within it are thrombosed. It is tortuous, and shows evidence of twisting.

The right tube measures 9 cm. in length; its uterine end is dark and kinked in two places; its distal end is pale, œdematous, and swollen. The ovarian ligament is thickened.

The left ovary also presents a cystic condition similar to the right, save that it has not the strangulated appearance of the latter. It consists of a congeries of thin-walled cysts containing pale straw-coloured fluid; several

of the cysts are ruptured. The tumour measures 8 × 7 cm.; the left tube is 7 cm. long, slightly thickened, but otherwise of normal appearance.

Microscopic sections have been prepared to show the nature of the suspicious areas in the uterine muscle, the character of the ovarian cyst walls, and the structure of the vesicular mole. The nodules in the wall of the uterus are seen to present the typical appearance of chorio-epithelioma. Within clefts between the muscle bundles can be seen wide plates and tortuous vacuolated bands of protoplasm studded with nuclei.

In this elementary tissue no differentiation into cells can be seen. In addition there are polyhedral cells, in places tightly packed together, and in other parts discrete. They have a clear protoplasm and a large nucleus, which stains deeply, and are derived from the internal trophoblastic layer of Langhans. The tortuous bands and plates of undifferentiated protoplasm are derived from the external trophoblastic layer of syncytium of the villi.

The co-existence of molar pregnancy and bilateral multilocular ovarian cysts, in which no unaltered ovarian tissue is apparent, appeared to me to be a point of such great interest, that I have endeavoured to find what evidence I could in German literature of any records of similar cases. The result of this investigation is as follows:

Baumgart (11), of Kassel, records a case of hydatidiform mole complicated by the presence of two ovarian cysts, the history of which is given as follows. The patient was aged 22 years; she married in June, 1900, and on January 22nd, 1901, she was delivered of a vesicular mole after having missed two periods. All bleeding ceased for a week but then came on again; accordingly she was admitted into hospital. The uterus was 11 cm. long and thickened; the os easily admitted the finger. A movable cystic tumour was felt on either side of the uterus, each of these being the size of a fœtal head. On April 25th, 1901, the uterus was curetted; the scrapings

revealed interstitial endometritis, degeneration of surface epithelium, and some isolated cystic villi. On June 8th laparotomy was performed; the right tumour was a cystic ovary with a twisted pedicle; it measured 20 × 8 cm. The left tumour was also of ovarian origin, of the same length as the right but much broader; it had a long pedicle, so that the cyst reached into the hypochondrium. Three weeks later the patient left hospital quite well. Baumgart (11) quotes Marchand (1) as saying that he has found hydatidiform mole and double cystic disease of the ovaries co-existent in many instances. I have tried to verify this quotation, but in Marchand's paper the only instance of concurrent ovarian disease relates to a case of vesicular mole in which death occurred from hæmorrhage; at the post-mortem examination the right ovary was found to contain a cyst the size of a cherry. Baumgart states that in the museum of the Halle clinic there is a preparation showing the co-existence of a hydatid mole and two ovarian cysts. In the 'American Journal of Obstetrics' Kreutzmann (2) gives the following account of a case of vesicular mole and coincident tumours of the ovaries. The patient was aged 28 years, 3-para. In the fourth month of gestation a watery sanguineous discharge was noticed. The general state of the patient was bad, labour-like pains started, the uterus rapidly increased in size, and felt very elastic and stretched. To the right of the uterus a fluctuating tumour was felt. The mole was passed spontaneously and the uterus afterwards curetted. The right-sided cyst burst under examination; cœliotomy was performed, and each ovary was found to be the seat of a proliferating glandular cystoma; the patient recovered. Max Runge (3) mentions that Grawitz, in making a post-mortem examination on a patient who died from nephritis a short time after the expulsion of a vesicular mole, found both ovaries to be the size of hen's eggs, each containing many cysts filled with clear watery fluid. Ludwig Fraenkl (4), in recording a case of "extensive carcinoma of the uterus from the epithelium of

the chorionic villi," mentions the fact that on opening the abdomen two ovarian tumours were seen on either side of the enlarged uterus; these proved to be multilocular ovarian cysts, each the size of a goose's egg. This case of Fraenkl's has so many points of resemblance to the one we are considering that I have abstracted it in detail. The patient was aged 25. She was admitted with the history that a few days previously she had passed a portion of a vesicular mole after a period of two months' amenorrhœa, followed by menorrhagia for one month. On emptying the uterus of the remaining portion of the mole thrombosis of the left saphena vein supervened, and the patient left hospital convalescent after two months' illness. She came to the clinic seventeen months later complaining of colic in the pelvis and abdomen, which had persisted for three months. On the right of the uterus a hard mobile tumour, adherent to and moving with the womb, was felt, reaching halfway up to the umbilicus. This tumour soon extended to the navel, and was everywhere painful. Pure blood was passed *per urethram*, and thereby the tumour was lessened in size. A tongue-like process extended from this growth deep into the pelvis, beyond the level of the portio cervicis; this was incised from the vagina, and pure blood escaped. On further examination two tumours, each the size of a goose's egg, were felt on either side of the large swelling, and quite distinct from it. Laparotomy was performed. The larger tumour had the position and shape of a gravid uterus, and the two lateral growths proved to be multilocular ovarian cysts; these were removed, and a dusky swelling seen on the right side of the uterus was thought at the time to be blood-clot, and so was left alone. The uterus was stitched to the lower angle of the abdominal wound, and the rest of the parietes sewn up. The uterus was next incised, with much bleeding. It was seen to be filled with a foul mass, in parts resembling placental villi; this was cleared out with the fingers, and the bleeding stopped. A month later the wound in the abdomen was

sewn up, but it burst open through two of the stitches, a sinus resulting which discharged an ichorous fluid. The right-sided swelling increased in size, and others formed on the left; blood continued to flow *per urethram;* several severe hæmorrhages followed. Left occipital headache became a most distressing symptom, accompanied by hyperæsthesia; the growth protruded through the abdominal fistula, the vaginal vault ulcerated in the vicinity of the deep pelvic tumours, and the patient died three months after the laparotomy. The growth was a chorio-epithelioma of the uterus, which had invaded the bladder, parametrium, and vagina, and had tracked upwards along the sinus leading to the abdominal wound. This case provides us with all the pathological points to which we are now directing attention, viz. a vesicular mole, accompanied by cystic disease of both ovaries, and leading to the development of chorio-epithelioma. Poten (5) mentions a case of molar pregnancy in which abortion occurred in the second month, and in which also two multilocular ovarian cysts were removed by laparotomy three weeks after the abortion of the mole. In the 'Lancet' for 1840 Wilton (6) records a case of hydatids terminating fatally by hæmorrhage, and says that at the autopsy the left ovary was found to be enlarged and stretched by hydatids.

A study of the cases referred to naturally suggests the question whether any causal relationship exists between cystic disease of the ovary and cystic disease of the chorionic villi. Findley (12) says there is no proof that cystic degeneration of the ovaries has any influence upon cystic degeneration of the ovum, but the idea that a pathological tendency of the ovary may be transmitted to the ovum is not infrequently met with in papers on this subject. Marchand (1) says the influence of the maternal organism makes itself felt upon the ovum in the ovary, the latter transmitting any peculiarities it may possess to the developing ovum. These tendencies to disease show themselves during the development of the ovum *in utero;*

he adds, however, "Whether an ovum developed in an ovary undergoing cystic degeneration can give rise to a vesicular mole is difficult to say." There are cases on record where a full-term child has been born a few months after the expulsion of a vesicular mole. Such twin pregnancies, in which one ovum develops normally and the other degenerates into a mole, afford an argument in favour of the view that the diseased ovum acquired its pathological tendencies whilst it was within the ovary. That ova may be primarily diseased seems very probable, especially when we remember the great tendency of glandular cells to undergo cystic and other degenerative changes. Notably is this the case in glands undergoing the involution phenomena which take place at or about the climacteric, and it is at this particular age that many observers have found vesicular disease of the chorion to be relatively most frequent, although Findley (12) puts the period of greatest frequency between twenty and thirty. F. A. Kehrer, of Heidelberg (7), records the ages of fifty patients who were the subjects of this disease, and he found that 22 per cent. of them were over forty years of age. Bloch (8) estimates the number of normal births occurring after forty years of age at 10 per cent., and he puts the number of molar pregnancies after that age at 28·5 per cent. Others, including Mayer and Schroder, have drawn attention to the relative frequency of molar pregnancy in advanced age. Again, it is not difficult to suppose, in reference to the possibility of primary disease of the ovum, that the fertility of the latter may still be sufficiently intact for impregnation and the early stages of development to occur.

Whatever may be the value of these suggestions as to the influence of the ovary in the production of vesicular disease of the chorion, such cases of twin pregnancy as that reported by Madame Boivin (9), where one of the twins degenerated into a mole and the other lived to be a celebrated Parisian anatomist, are more easily explained by the ovarian theory than by Veit's view that the endo-

metrium is accountable for the disease of the fœtal portion of the placenta. The main interest of this case, however, does not lie in the fact that it demonstrates the co-existence of double ovarian disease and myxomatous growth of the fœtal portion of the placenta, but in the remarkable fact that three weeks after the delivery of the mole two distinctly separate chorio-epitheliomatous growths were discovered deep in the uterine muscle. In January, 1902, I demonstrated before this Society, by a series of lantern slides, the different stages by which the plasmodial buds and cells of Langhans' layer trespass beyond their attachment to the villi, through Nitabuch's membrane into the maternal portion of the placenta, and from thence into the walls of the uterus itself.

The specimen exhibited to-night was the one I then employed as the final link in the chain of evidence proving the close association between hydatidiform mole and chorio-epithelioma. Plate XXV shows a space in the uterine muscle more or less filled by syncytium, the muscle around being infiltrated by round-cells. Plate XXIV shows the nodule from which the section was prepared. This case affords the pathological explanation of the well-recognised clinical fact that vesicular mole is the frequent (16 per cent.—Findley) percursor of chorio-epithelioma. The latter is only an extension of a process already begun in the development of a hydatid mole,—in other words, a vesicular mole, as regards its structure and potentialities, is to be regarded as the incipient stage of chorio-epithelioma. Fraenkl's case demonstrates what would have been the fate of Mr. Malcolm's patient had not hysterectomy been performed before the malignant growth had time to trespass beyond the walls of the uterus.

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Dr. PETER HORROCKS congratulated Mr. Malcolm and all those concerned in the happy issue of their case, for there could be no doubt that this woman had been rescued from a very dangerous condition. There was one practical point which stood out prominently during the reading of the paper, and that was the great superiority of the finger over the curette in the removal of a hydatid mole. With the finger one could gently scrape away the hydatids from the places where they were attached, instead of blindly scraping everywhere as with a curette. Secondly, one knew just how much pressure to employ to detach them; also one could carefully avoid going too deeply at those points where the villi penetrated further than healthy chorionic villi, as they were apt to do; and lastly, it might have been possible, had the finger only been used, to discover the malignant disease in the wall of the uterus.

Dr. HERBERT SPENCER hoped the authors would alter the title of the paper, so as to include the essential feature of the case—namely, the occurrence of chorion-epithelioma after hydatidiform mole in a patient with cystic disease of the ovaries. He agreed with Dr. Horrocks that curetting was a dangerous method of removing a mole, and it appeared possible, from an examination of one of the specimens, that the growth had been inoculated by the curette. He did not approve of Mr. Malcolm's

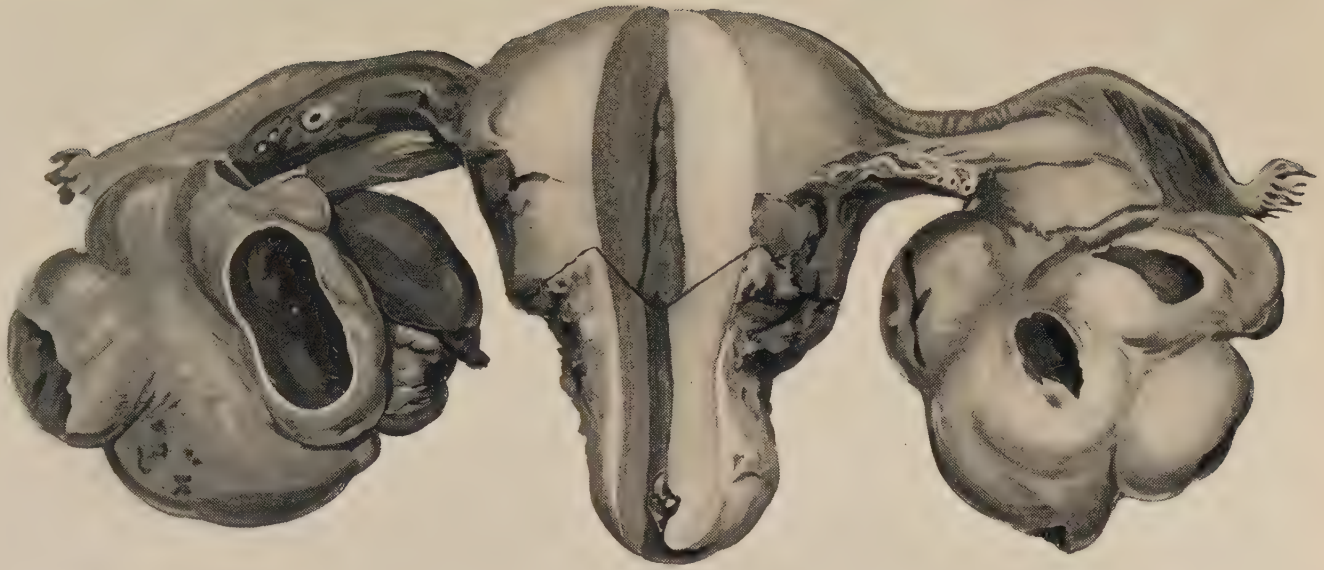
intention to remove the uterus by the supra-vaginal amputation. Whatever views might be held as to the relative advantages of amputation and total hysterectomy in the case of fibroids, he thought that in suspected malignant disease, and especially in chorion-epithelioma (in which growths were known to occur in the cervix), total hysterectomy should be performed.

Mr. G. J. B. Stevens, as a visitor, begged to thank the authors for their papers. Especially he wished to do so as there was a practical piece of information of much importance to men in general practice, and which could be obtained only by attendance at some such society as this, as it formed no part of book-reading. In the course of thirty-seven years of practice the few cases he had had to deal with were cleared out by the finger and ovum forceps. They happened before the curette was much talked about. Having once got rid of the uterine contents, after consequences or associated troubles scarcely entered his head. Now, however, he should be careful to apply to the next case the knowledge imparted, and should look carefully for associated changes in the ovaries and uterus.

Mrs. Scharlieb gave a short account of a case of vesicular mole complicated with double multilocular ovarian cysts.

Dr. Bell, in reply, said that this case, which was the first to come under his care after his appointment to the Samaritan Hospital, was one which had always seemed to him of very great clinical and pathological interest. The difficulties of diagnosis and treatment were very considerable. He wished particularly to refer to the question of curetting, the propriety of which had been questioned by both Dr, Horrocks and Dr. Spencer. He quite admitted that the use of the curette was not usually advisable in cases of hydatidiform mole, and in the only other two cases which had come under his own care he had been able to evacuate the uterus with the ovum forceps and the finger. This case, however, was exceptional. After removing the bulk of the tumour with the ovum forceps he put in a finger to scrape away the rest. But it proved very tough; the hæmorrhage was considerable, and the condition of the woman, bad before the operation began, was now very serious. It was under these circumstances that it was determined to use the flushing curette, which checked the hæmorrhage, and was more expeditious. He (the speaker) recognised that there was some risk, but it appeared to him that it was a choice of risk, and that under the special circumstances of the case he had made the right decision. Perhaps these special circumstances had not been made sufficiently plain in the paper, and it had appeared as if he advocated the use of the curette in all cases. This was not the case, and after the remarks of Dr. Horrocks and Dr. Spencer he would probably hesitate still more in the future than he had done on this occasion.

Mr. MALCOLM supported Dr. Bell's view that in this particular case it was impossible to remove all the hydatidiform material with the finger. Indeed, it was thought that at the first operation all the disease was not removed by the curette. He also thought that it was not likely that the new growths could have been felt by digital examination, because they were so small and so deeply placed in the uterine muscle. The suggestion that a wound made by the curette might have allowed the disease to gain access to the tissues might be correct, but it did not seem necessary to assume the existence of a wound if a new growth was adherent to the interior of the uterus. As regarded the removal of the body of the uterus first and the cervix afterwards, it would have been better to remove both at once; but the removal of the body was undertaken rather as a precaution than on account of any definite disease diagnosed, and the cervix had always appeared healthy. When the suspicious parts were observed it seemed desirable to remove the cervix also, and this was done.



Mr Malcolm, Dr Cuthbert Lockyer and Dr Hamilton Bell's case of Chorio-epithelioma uteri removed 21 days after expulsion of Vesicular mole.

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Discs of uterine tissue removed at the operation from just above the internal os uteri and showing the areas of Chorio-epithelliomatous invasion described in the text.

A. *Area from which micro. section was taken.*

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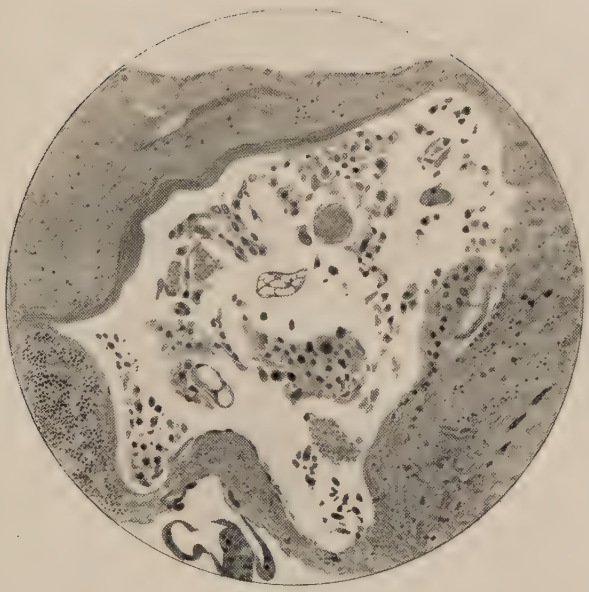

Drawing of section taken at point A in pl. II showing syncytial masses and cells derived from the syncytium lying in a space sur-rounded by uterine muscle.

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